

# THE AMERICAN PSYCHOLOGIST

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# THE AMERICAN PSYCHOLOGIST

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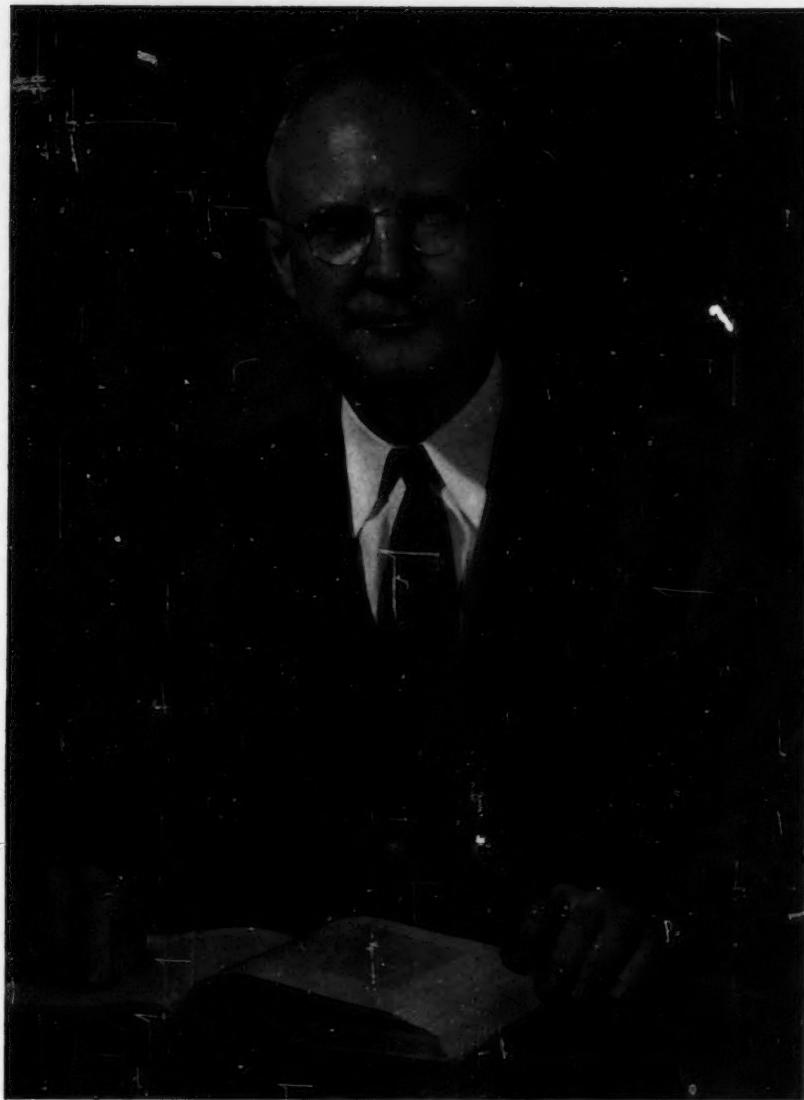
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J. P. GUILFORD

*Professor of Psychology, University of Southern California*

President of the American Psychological Association, 1950

# CREATIVITY<sup>1</sup>

J. P. GUILFORD

*University of Southern California*

I DISCUSS the subject of creativity with considerable hesitation, for it represents an area in which psychologists generally, whether they be angels or not, have feared to tread. It has been one of my long-standing ambitions, however, to undertake an investigation of creativity. Circumstances have just recently made possible the realization of that ambition.<sup>2</sup> But the work has been started only within the past year. Consequently, if you are expecting answers based upon new empirical research you will be disappointed. What I can do at this time is to describe the plans for that research and to report the results of considerable thinking, including the hypotheses at which my students and I have arrived after a survey of the field and its problems. The research design, although not essentially new, should be of some interest. I will also point out some implications of the problems of creativity in vocational and educational practices.

## SOME DEFINITIONS AND QUESTIONS

In its narrow sense, creativity refers to the abilities that are most characteristic of creative people. Creative abilities determine whether the individual has the power to exhibit creative behavior to a noteworthy degree. Whether or not the individual who has the requisite abilities will actually produce results of a creative nature will depend upon his motivational and temperamental traits. To the psychologist, the problem is as broad as the qualities that contribute significantly to creative productivity. In other words, the psychologist's problem is that of creative personality.

In defining personality, as well as other concepts preparatory to an investigation, definitions of an operational type are much to be preferred. I have often defined an individual's personality as his unique pattern of traits. A trait is any relatively

enduring way in which persons differ from one another. The psychologist is particularly interested in those traits that are manifested in performance; in other words, in behavior traits. Behavior traits come under the broad categories of aptitudes, interests, attitudes, and temperamental qualities. By aptitude we ordinarily mean a person's readiness to learn to do certain types of things. There is no necessary implication in this statement as to the source of the degree of readiness. It could be brought about through hereditary determination or through environmental determination; usually, if not always, by an interaction of the two. By interest we usually mean the person's inclination or urge to engage in some type of activity. By attitude we mean his tendency to favor or not to favor (as shown objectively by approach-withdrawal behavior) some type of object or situation. Temperamental qualities describe a person's general emotional disposition: for example, his optimism, his moodiness, his self-confidence, or his nervousness.

Creative personality is then a matter of those patterns of traits that are characteristic of creative persons. A creative pattern is manifest in creative behavior, which includes such activities as inventing, designing, contriving, composing, and planning. People who exhibit these types of behavior to a marked degree are recognized as being creative.

There are certain aspects of creative genius that have aroused questions in the minds of those who have reflected much about the matter. Why is creative productivity a relatively infrequent phenomenon? Of all the people who have lived in historical times, it has been estimated that only about two in a million have become really distinguished (5). Why do so many geniuses spring from parents who are themselves very far from distinguished? Why is there so little apparent correlation between education and creative productiveness? Why do we not produce a larger number of creative geniuses than we do, under supposedly enlightened, modern educational practices? These are serious questions for thought and

<sup>1</sup> Address of the President of the American Psychological Association at Pennsylvania State College, September 5, 1950.

<sup>2</sup> A research project on the aptitudes of high-level personnel, supported by the Office of Naval Research.

investigation. The more immediate and more explorable problem is a double one: (1) How can we discover creative promise in our children and our youth? and (2) How can we promote the development of creative personalities?

#### NEGLECT OF THE STUDY OF CREATIVITY

The neglect of this subject by psychologists is appalling. The evidences of neglect are so obvious that I need not give proof. But the extent of the neglect I had not realized until recently. To obtain a more tangible idea of the situation, I examined the index of the *Psychological Abstracts* for each year since its origin. Of approximately 121,000 titles listed in the past 23 years, only 186 were indexed as definitely bearing on the subject of creativity. The topics under which such references are listed include creativity, imagination, originality, thinking, and tests in these areas. In other words, less than two-tenths of one per cent of the books and articles indexed in the *Abstracts* for approximately the past quarter century bear directly on this subject. Few of these advance our understanding or control of creative activity very much. Of the large number of textbooks on general psychology, only two have devoted separate chapters to the subject during the same period.

Hutchinson, reviewing the publications on the process of creative thinking to the year 1931, concluded that the subject had hardly been touched by anyone (7). Markey, reviewing the subject of imagination four years later, reported very little more in the way of a fundamental contribution to the subject (9).

Some of you will undoubtedly feel that the subject of creative genius has not been as badly neglected as I have indicated, because of the common belief that genius is largely a matter of intelligence and the IQ. Certainly, that subject has not been neglected. But, for reasons which will be developed later, I believe that creativity and creative productivity extend well beyond the domain of intelligence.

Another important reason for the neglect, of course, is the difficulty of the problems themselves. A practical criterion of creativity is difficult to establish because creative acts of an unquestioned order of excellence are extremely rare. In this respect, the situation is much like that of a criterion for accident proneness which calls for the actual occurrence of accidents. The accidental nature of

many discoveries and inventions is well recognized. This is partly due to the inequality of stimulus or opportunity, which is largely a function of the environment rather than of individuals. But if environmental occasions were equal, there would still be great differences in creative productivity among individuals.

There are, however, greater possibilities of observing individual differences in creative performance if we revise our standards, accepting examples of lower degrees of distinction. Such instances are more numerous. But even if we can detect and accept as creative certain acts of lower degrees of excellence, there are other difficulties. Creative people differ considerably in performance from time to time. Some writers on the subject even speak of rhythms of creativity. This means that any criterion, and probably any tests of creativity as well, would show considerable error variance due to function fluctuation. Reliabilities of tests of creative abilities and of creative criteria will probably be generally low. There are ways of meeting such difficulties, however. We should not permit them to force us to keep foot outside the domain.

Another reason for the oversight of problems of creativity is a methodological one. Tests designed to measure intelligence have fallen into certain stereotyped patterns, under the demands for objectivity and for scoring convenience. I do not now see how *some* of the creative abilities, at least, can be measured by means of anything but completion tests of some kind. To provide the creator with the finished product, as in a multiple-choice item, may prevent him from showing precisely what we want him to show: his own creation. I am not opposed to the use of the multiple-choice or other objectively scorables types of test items in their proper places. What I am saying is that the quest for easily objectifiable testing and scoring has directed us away from the attempt to measure some of the most precious qualities of individuals and hence to ignore those qualities.

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TESTING

Still another reason for the neglect of the problems of creativity is to be found in certain emphases we have given to the investigations of learning. For one thing, much learning research has been done with lower animals in which signs of creativity are almost nonexistent. For another thing, learning theory has been generally formulated to cover those phenomena that are easiest to order in logical schema. Learning theorists have had con-

siderable difficulty with the behavior known as insight, to which creative behavior shows much apparent relationship (15). It is proper to say that a creative act is an instance of learning, for it represents a change in behavior that is due to stimulation and/or response. A comprehensive learning theory must take into account both insight and creative activity.

#### THE SOCIAL IMPORTANCE OF CREATIVITY

There is general recognition, on the part of those outside the academic fold, at least, of the importance of the quest for knowledge about creative disposition. I can cite recent evidences of the general interest in the discovery and development of creative talent. Large industries that employ many research scientists and engineers have held serious meetings and have had symposia written about the subject (9). There is much questioning into the reasons why graduates from the same institutions of higher learning, with high scholastic records and with strong recommendations, differ so widely in output of new ideas. The enormous economic value of new ideas is generally recognized. One scientist or engineer discovers a new principle or develops a new process that revolutionizes an industry, while dozens of others merely do a passable job on the routine tasks assigned to them.

Various branches of the government, as you all know, are now among the largest employers of scientific and technical personnel. These employers, also, are asking how to recognize the individuals who have inventive potentialities. The most common complaint I have heard concerning our college graduates in these positions is that while they can do assigned tasks with a show of mastery of the techniques they have learned, they are much too helpless when called upon to solve a problem where new paths are demanded.

Both industry and governmental agencies are also looking for leaders. Men of good judgment, planning ability, and inspiring vision are in great demand. How can leaders with imagination and vision be discovered? Can such qualities be developed? If those qualities can be promoted by educational procedures, what are those procedures?

We hear much these days about the remarkable new thinking machines. We are told that these machines can be made to take over much of men's thinking and that the routine thinking of many industries will eventually be done without the employ-

ment of human brains. We are told that this will entail an industrial revolution that will pale into insignificance the first industrial revolution. The first one made man's muscles relatively useless; the second one is expected to make man's brain also relatively useless. There are several implications in these possibilities that bear upon the importance of creative thinking. In the first place, it would be necessary to develop an economic order in which sufficient employment and wage earning would still be available. This would require creative thinking of an unusual order and speed. In the second place, eventually about the only economic value of brains left would be in the creative thinking of which they are capable. Presumably, there would still be need for human brains to operate the machines and to invent better ones.

#### SOME GENERAL THEORIES OF THE NATURE OF CREATIVITY

It is probably only a layman's idea that the creative person is peculiarly gifted with a certain quality that ordinary people do not have. This conception can be dismissed by psychologists, very likely by common consent. The general psychological conviction seems to be that all individuals possess to some degree all abilities, except for the occurrence of pathologies. Creative acts can therefore be expected, no matter how feeble or how infrequent, of almost all individuals. The important consideration here is the concept of continuity. Whatever the nature of creative talent may be, those persons who are recognized as creative merely have more of what all of us have. It is this principle of continuity that makes possible the investigation of creativity in people who are not necessarily distinguished.

The conception that creativity is bound up with intelligence has many followers among psychologists. Creative acts are expected from those of high IQ and not expected from those of low IQ. The term "genius," which was developed to describe people who distinguish themselves because of creative productivity, has been adopted to describe the child with exceptionally high IQ. Many regard this as unfortunate, but the custom seems to have prevailed.

There is much evidence of substantial, positive correlations between IQ as measured by an intelligence test and certain creative talents, but the extent of the correlations is unknown. The

work of Terman and his associates is the best source of evidence of these correlations; and yet, this evidence is not decisive. Although it was found that distinguished men of history generally had high estimated IQ's, it is not certain that indicators in the form of creative behavior have not entered into those estimations (2). It would be much more crucial to know what the same individuals would have done on intelligence tests when they were children. Terman's study of the thousand children of exceptionally high IQ's who have now reached maturity does not throw much light on this theory. Among the group there is plenty of indication of superior educational attainment and of superior vocational and social adjustment. On the other hand, there seems to be as yet little promise of a Darwin, an Edison, or a Eugene O'Neill, although the members of the group have reached the age level that has come to be recognized as the "most creative years." The writers on that study recognize this fact and account for it on the basis of the extreme rarity of individuals of the calibre of those whom I have mentioned (11). It is hoped that further follow-up studies will give due attention to criteria of a more specifically creative character.

When we look into the nature of intelligence tests, we encounter many doubts concerning their coverage of creative abilities. It should be remembered that from the time of Binet to the present, the chief practical criterion used in the validation of tests of intellect has been achievement in school. For children, this has meant largely achievement in reading and arithmetic. This fact has generally determined the nature of our intelligence tests. Operationally, then, intelligence has been the ability (or complex of abilities) to master reading and arithmetic and similar subjects. These subjects are not conspicuously demanding of creative talent.

Examination of the content of intelligence tests reveals very little that is of an obviously creative nature. Binet did include a few items of this character in his scale because he regarded creative imagination as one of the important higher mental functions that should be included. Revisions of the Binet scale have retained such items, but they represent only a small minority. Group tests of intelligence have generally omitted such items entirely.

The third general theory about creativity is, in fact, a theory of the entire personality, *including*

intelligence. I have defined personality as a unique pattern of traits, and traits as a matter of individual differences. There are thousands of observable traits. The scientific urge for rational order and for economy in the description of persons directs us to look for a small number of descriptive categories. In describing mental abilities, this economy drive has been grossly overdone when we limit ourselves to the single concept of intelligence. Furthermore, the term "intelligence" has by no means achieved logical or operational invariance and so does not satisfy the demand for rational order.

We do not need the thousands of descriptive terms because they are much interrelated, both positively and negatively. By intercorrelation procedures it is possible to determine the threads of consistency that run throughout the categories describing abilities, interests, and temperament variables. I am, of course, referring to the factorial conception of personality. From this point of view, personality is conceived geometrically as a hypersphere of  $n$  dimensions, each dimension being a dependable, convenient reference variable or concept. If the idea of applying this type of description to a living, breathing individual is distasteful, remember that this geometric picture is merely a conceptual model designed to encompass the multitude of observable facts, and to do it in a rational, communicable, and economical manner.

With this frame of reference, many of the findings and issues become clarified. The reason that different intelligence tests do not intercorrelate perfectly, even when errors of measurement have been taken into account, is that each test emphasizes a different pattern of primary abilities. If the correlations between intelligence-test scores and many types of creative performance are only moderate or low, and I predict that such correlations will be found, it is because the primary abilities represented in those tests are not all important for creative behavior. It is also because some of the primary abilities important for creative behavior are not represented in the test at all. It is probably safe to say that the typical intelligence test measures to a significant degree not more than a half-dozen of the intellectual factors (8). There are surely more intellectual factors than that. Some of the abilities contributing to creative success are probably non-intellectual; for example, some of them are perceptual. Probably, some of the factors most crucial to creative performance have not

Hear! Hear!

yet been discovered in any type of test. In other words, we must look well beyond the boundaries of the IQ if we are to fathom the domain of creativity.

#### DEVELOPMENT OF CREATIVITY

Before referring to the experimental design and to more specific hypotheses concerning the nature of creativity, I will venture one or two opinions on the general problem of the development of creativity. For I believe that much can be done to encourage its development. This development might be in the nature of actual strengthening of the functions involved or it might mean the better utilization of what resources the individual possesses, or both. In any case, a knowledge of the functions is important.

We frequently hear the charge that under present-day mass-education methods, the development of creative personality is seriously discouraged. The child is under pressure to conform for the sake of economy and for the sake of satisfying prescribed standards. We are told by the philosophers who have given thought to the problem that the unfolding of a creative personality is a highly individual matter which stresses uniqueness and shuns conformity. Actually, the unfolding of the individual along the lines of his own inclinations is generally frowned upon. We are told, also, that the emphasis upon the memorizing of facts sets the wrong kind of goal for the student. How serious these charges are no one actually knows. We have very little experimental evidence that is decisive one way or the other and such evidence is hard to obtain.

Charles Kettering one time commented upon a survey in which it was found that a person with engineering or scientific training had only half the probability of making an invention compared with others. His comment was that an inventor should be defined as "a fellow who doesn't take his education too seriously" (9). If the results of that survey represent the actual situation, either creative individuals do not seek higher education in engineering and science, or that kind of education has negative transfer effects with respect to inventiveness.

Many of us teachers assert that it is our main objective to teach students how to think, and this means also to think constructively. Certainly, if we succeeded in this objective, there should be much evidence of creativeness in the end product. I am convinced that we do teach some students to think,

but I sometimes marvel that we do as well as we do. In the first place, we have only vague ideas as to the nature of thinking. We have little actual knowledge of what specific steps should be taken in order to teach students to think. Our methods are shotgun methods, just as our intelligence tests have been shotgun tests. It is time that we discarded shotguns in favor of rifles.

We all know teachers who pride themselves on teaching students to think and yet who give examinations that are almost entirely a matter of knowledge of facts. Please do not misunderstand me. I have a strong appreciation of knowledge of facts. No creative person can get along without previous experiences or facts; he never creates in a vacuum or with a vacuum. There is a definite place for the learning of facts in our educational system. But let us keep our educational objectives straight. Let us recognize where facts are important and where they are not. Let us remember, too, that the kinds of examinations we give really set the objectives for the students, no matter what objectives we may have stated.

The confusion of objectives is illustrated by the following incident. The story was told by a former dean of a leading Midwestern University. An old, experienced teacher and scholar said that he tried to encourage originality in his students. In a graduate course, he told the class that the term paper would be graded in terms of the amount of originality shown. One school teacher in the class was especially concerned about getting a high mark in the course. She took verbatim notes, continuously and assiduously, of what the learned professor said in class. Her term paper, the story goes, was essentially a stringing together of her transcribed lecture notes, in which the professor's pet ideas were given prominent place. It is reported that the professor read the term papers himself. When the school teacher's paper was returned, the professor's mark was an A, with the added comment, "This is one of the most original papers I have ever read."

Before we make substantial improvement in teaching students to think, in my opinion we will have to make some changes in our conceptions of the process of learning. The ancient faculty psychology taught that mental faculties grow strong by virtue of the exercise of those faculties. We all know from the many experiments on practice in memorizing that exercises in memorizing are not

necessarily followed by improvement of memory in general. We all know that exercises in perceptual discriminations of certain kinds are not followed by improvement of perceptual discriminations in general (13). Thorndike and others concluded that the study of courses in high-school curricula did not necessarily result in a general improvement in intellect, but that the increases in test scores could be attributed to learning of a more specific nature (1, 12). Following this series of experiments the conclusion has often been that learning consists of the development of specific habits and that only very similar skills will be affected favorably by the learning process.

In view of the newer findings concerning primary abilities, the problems of formal discipline take on new meaning, and many of the experiments on the transfer of training will have to be reexamined and perhaps repeated with revised conditions. The experiments just cited do justify the rejection of the concepts of a general memory power, a general perceptual-discrimination power, and perhaps, also, rejection of the concept of a single power called intellect. These findings are in harmony with factorial theory. But the other alternative to the idea of formal discipline is not necessarily a theory of specific learning from specific practice.

There is certainly enough evidence of transfer effects. Experiments should be aimed to determine whether the instances of positive, zero, and negative transfer effects conform in a meaningful way to the outlines of the primary abilities. The work of Thorndike and others that I have just cited does, in fact, actually throw some light on this question. Although this aspect of their findings is usually not mentioned, they reported that high-school students' experiences in numerical, verbal, and spatial types of courses—arithmetic and book-keeping, Latin and French, and manual training—were associated with relatively greater gains in numerical, verbal, and spatial types of tests, respectively.

A general theory to be seriously tested is that some primary abilities can be improved with practice of various kinds and that positive transfer effects will be evident in tasks depending upon those abilities. At the present time some experiments of this type are going on in the Chicago schools under the direction of Thelma Gwinn Thurstone (14). In one sense, these investigations have returned to the idea of formal discipline. The new aspect of the

disciplinary approach is that the presumed functions that are being "exercised" have been indicated by empirical research.

#### FACTORIAL RESEARCH DESIGN

The general outline of the design for a factor-analysis investigation is familiar to many of you. It has been described before but needs to be emphasized again (14). The complete design involves a number of steps, not all of which are essential but all of which are highly desirable if the investigator is to make the most efficient use of his time and to achieve results of maximum value. The major steps will be mentioned first, then more details concerning some of them.

One first chooses the domain of his investigation. It may be the domain of memory abilities, visual-perceptual abilities, reasoning abilities, or the domain of introversion-extraversion.

One next sets up hypotheses as to the factors he expects to find in that domain. His preparatory task of hypothesis formation goes further. It includes the framing of several alternative hypotheses as to the more precise nature of each factor. This is necessary as the basis for transforming each factor hypothesis into the operational terms of test ideas. He then constructs tests which he thinks will measure individual differences in the kind of ability, or other quality, he thinks the factor to be. He will want to include in the test battery some reference tests that measure already known factors. One reason for this is that the new tests will almost inevitably also measure to some extent factors that have previously been established, such as verbal comprehension, number facility, and visualization. If such variance is probably going to appear in more than one new test in the battery, it is best to have that variance clearly brought out and readily identifiable. Another reason is that it is possible, after all, that one or more of the hypothesized factors will turn out to be identifiable with one or more of the known factors. The possibility of this identification must be provided for by having the suspected, known factors represented in the battery.

The test battery is administered to a sample of adequate size from a population of appropriate qualifications. Certain kinds of populations are better for bringing out variances in some common factors and other kinds are more suitable for other purposes. There should be relative homogeneity

in certain features that might be correlated with the factors, such as sex, age, education, and other conditions. Some thought should be given to whether tests should be speed tests or power tests or something between the two. Some consideration should also be given to the most appropriate type of score for each test.

Factors are extracted and their reference axes are rotated into positions that are compelling because of the nature of the configuration of test vectors in the hyperspace. The psychological nature of each factor is surmised by virtue of the kinds of tests that have substantial variance attributable to that factor in contrast to tests which lack that variance.

In many respects, the complete factor-analysis design has properties parallel to those of a good experiment. In both, we begin with hypotheses. In both, some conditions are held constant while others are varied. In both, the measured outcomes point toward or away from the hypotheses. One important difference is the possibility of a statistical test of significance of the measured result for the experiment but not for the factor analysis. Confidence in the latter case depends upon the compellingness of the factor structure and the repeated verification of a result.

As an illustration of this analogy to an experiment, I will cite the factorial study of the well-known figure-analogies test. In the Army Air Forces research results, the figure-analogies test exhibited variances in three factors denoted as reasoning I, II, and III (6). They were thus designated because they were peculiar to a number of reasoning tests, but their more precise natures were obscure. Examination of what one does in solving a figure-analogies item suggests several possible psychological functions or activities. First, one has to grasp correctly the relation between figure one and figure two. This suggests an ability to see a relationship between two objects. Second, one must observe the properties of the third figure. Then, one has to see what kind of a fourth figure it takes to satisfy the same relationship between figure three and figure four. Having decided upon the kind of figure needed, one has to find it among four or five that are supplied in the multiple-choice item. This is a kind of classifying act. There is still another possibility. The mislead responses may be so reasonable that considerable discrimina-

tion may be needed to select the best figure for the purpose. Considering the figure-analogies item from a more holistic point of view, there may be a primary ability involved in seeing that there is an identity of two relationships when the elements related are different. Or, there may be a general reasoning-by-analogy ability. Transposability of relations may be a key function here. Thus, we have several hypotheses as to the functions involved. There could be others. For every one of them we also have the further question as to whether the ability implied is restricted to the visual perception of figures or whether it is more general, extending to word meanings, numbers, and sounds. And if it is general, what are its limits?

To seek answers by factorial methods, one would construct special tests, each limited, if possible, to one kind of act implied by each hypothesis. One would also vary the kind of material in each type of test to explore the scope of generality. The answers to the hypotheses (for each hypothesis is in reality a question) would be to find that the loading for each factor would rise with some of the variations and fall with others as compared to its loading in the traditional figure-analogies test. We would hope to find the changes in factor loadings so marked that we would not feel seriously the lack of *t* tests or *F* tests.

The question of the sources of factor hypotheses calls for some comment. In a domain in which there have already been factorial studies, the previous results are always suggestive. This makes it appear that the factorist merely moves from hypotheses to hypotheses. This is quite true. It is a fundamental truth of all scientists, no matter what their methods. Some hypotheses are merely better supported and more generally accepted than others at the time. There is enough uncertainty left in many a hypothesis to invite further investigation. That is what makes science interesting. That is what I think Kettering meant when he stated that the inventor is one who does not take his education (or knowledge) too seriously.

In a personality domain in which there has been little previous illumination of the underlying variables, other sources of hypotheses must be sought. The critical-incident technique of Flanagan would be one useful exploratory approach (4). Incidentally, one might say that this method has been used informally in connection with creative people from

the "Eureka" episode of Archimedes down to modern times. The literature includes many descriptions of creative events. It would be more correct to refer to these historical reports as anecdotes, however, rather than critical incidents, since they suffer from most of the weaknesses of anecdotes. Where modern writers have attempted to interpret them psychologically, the interpretations have been quite superficial. They abound with vague concepts such as "genius," "intuition," "imagination," "reflection," and "inspiration," none of which leads univocally to test ideas. In the writings of those who have attempted to give a generalized picture of creative behavior, there is considerable agreement that the complete creative act involves four important steps.

According to this picture, the creator begins with a period of preparation, devoted to an inspection of his problem and a collection of information or material. There follows a period of incubation during which there seems to be little progress in the direction of fulfillment. But, we are told, there is activity, only it is mostly unconscious. There eventually comes the big moment of inspiration, with a final, or semi-final, solution, often accompanied by strong emotion. There usually follows a period of evaluation or verification, in which the creator tests the solution or examines the product for its fitness or value. Little or much "touching up" may be done to the product.

Such an analysis is very superficial from the psychological point of view. It is more dramatic than it is suggestive of testable hypotheses. It tells us almost nothing about the mental operations that actually occur. The concepts do not lead directly to test ideas. In attempting to distinguish between persons with different degrees of creative talent, shall we say, for example, that some individuals are better incubators than others? And how would one go about testing for incubating ability? The belief that the process of incubation is carried on in a region of the mind called the unconscious is of no help. It merely chases the problem out of sight and thereby the chaser feels excused from the necessity of continuing the chase further.

It is not incubation itself that we find of great interest. It is the nature of the processes that occur during the latent period of incubation, as well as before it and after it. It is individual differences

in the efficiency of those processes that will be found important for identifying the potentially creative. The nature of those processes or functions will have to be inferred from performances of the individuals who have been presented with problems, even though the creator is largely unaware of them.

#### SPECIFIC HYPOTHESES CONCERNING CREATIVE ABILITIES

The hypotheses that follow concerning the nature of creative thinking have been derived with certain types of creative people in mind: the scientist and the technologist, including the inventor. The consensus of the philosophers seems to have been that creativity is the same wherever you find it. To this idea I do not subscribe. Within the factorial frame of reference there is much room for different types of creative abilities. What it takes to make the inventor, the writer, the artist, and the composer creative may have some factors in common, but there is much room for variation of pattern of abilities. Some of the hypotheses mentioned here may apply also to areas of creative endeavor other than science, technology, and invention, but others may not. Included in the list of primary abilities that may contribute to creative efforts of these special groups are the reasoning factors, but I shall restrict mention here to other possible thinking factors that are more obviously creative in character.

First, there are probably individual differences in a variable that may be called *sensitivity to problems*. How this variation among individuals may come about will not concern us at this time. Whether it is best regarded as an ability or as a temperament trait will not concern us, either. The fact remains that in a certain situation one person will see that several problems exist while another will be oblivious to them.

Two scientists look over a research report. There are generally acceptable conclusions, but there is one minor discrepancy in the results. One scientist attributes the discrepancy to "experimental error." The other feels uneasy about the discrepancy; it piques his curiosity; it challenges him for an explanation. His further thinking about the matter develops into a new research project from which highly important findings result. Such an incident was reported by Flanagan (4); it could be found duplicated many times.

There are questions as to the generality of such a variable. Is the supposed sensitivity restricted to a certain kind of situation or a certain kind of problem? Is it a perceptual quality as well as a thought quality? Could it be a general impressionability to the environment? Is it our old friend "curiosity" under a new name? Is it an ability to ask questions? Is it a general inhibition against closure? There may be other hypotheses just as pertinent. Each one suggests possible tests of individual differences.

Examples of possible tests follow. One might present the examinee with a short paragraph of expository material and instruct him to ask as many questions as he can that are suggested by the statements, with relatively liberal time allowed. A large part of the scientist's success depends upon his ability to ask questions, and, of course, to ask the right questions. In another test, one might name common household appliances, such as a toaster, or articles of clothing, such as trousers, and ask the examinee to list things that he thinks are wrong or could be improved. As a perceptual test, one might present pictures of objects or forms that are conventional and regular except for minor irregularities. Can the examinee detect the unusual features or will he overlook them? A third possibility is in the form of what we have called a "frustration test," merely because it is somewhat frustrating to many who have tried it. Contrary to the usual test practice, no task instruction is given: only items, and the very general instruction "do something with each item; whatever you think should be done." Each item is of a different type. One or two examinees have refused to do anything with the test.

There is very likely a *fluency* factor, or there are a number of fluency factors, in creative talent. Not that all creators must work under pressure of time and must produce rapidly or not at all. It is rather that the person who is capable of producing a large number of ideas per unit of time, other things being equal, has a greater chance of having significant ideas. There have been previous results yielding several verbal-fluency factors but I have insufficient time to acknowledge those studies properly here. It is probable that there are a number of fluency factors, nonverbal as well as verbal, yet undiscovered. There is a general problem to be investigated, apart from creativity, whether many

of the primary thinking abilities have both a power and a speed aspect somewhat independent of each other. Some work of Davidson and Carroll (3) suggests this in a result with regard to one of the reasoning factors.

One kind of fluency test would consist of asking the examinee to name as many objects as he can in a given time, the objects having some specified property; for example, things round, things red, or things to eat. In another test, the ideas might be more complex, as in naming a list of appropriate titles for a picture or for a short story. Still more demanding and also more restricting would be the task of naming exceptions to a given statement. Fluency of inferences may be tested by providing a hypothetical statement to which the examinee is to state as many consequences or implications as he can in a limited time. The statement might be: A new invention makes it unnecessary for people to eat; what will the consequences be? This type of test has been previously proposed by several investigators.

The creative person has *novel* ideas. The degree of novelty of which the person is capable, or which he habitually exhibits, is pertinent to our study. This can be tested in terms of the frequency of uncommon, yet acceptable, responses to items. The tendency to give remote verbal associations in a word-association test; to give remote similarities in a similes test; and to give connotative synonyms for words, are examples of indications of novelty of ideas in the category of verbal tests.

The individual's *flexibility* of mind, the ease with which he changes set, can possibly be indicated in several ways by means of tests. Although there have been disappointments in the attempt to establish a common factor of this type (6), the concept of flexibility and of its probable opposite, rigidity, will not be downed. In conjunction with some of the fluency tests, there may be opportunities to obtain some indications concerning flexibility. Does the examinee tend to stay in a rut or does he branch out readily into new channels of thought? Tests whose items cannot be correctly answered by adhering to old methods but require new approaches, in opposition to old habits of thinking, would be pertinent here. Certain types of puzzles fit this requirement fairly well, for example, a problem in which the examinee cannot succeed without folding

*creativity*  
*fluency*  
*novel*  
*flexibility*

the paper on which he writes, and the idea of doing so must come from him.

Much creative thinking requires the organizing of ideas into larger, more inclusive patterns. For this reason, we have hypothesized a *synthesizing ability*. As a counterpart to this, one might well expect an *analyzing ability*. Symbolic structures must often be broken down before new ones can be built. It is desirable to explore many kinds of both synthesizing and analyzing activities, in both perceptual and conceptual problems, in order to determine the existence of such factors and their numbers and whether they cut across both perceptual and conceptual areas.

From Gestalt psychology comes the idea that there may be a factor involving *reorganization* or *redefinition* of organized wholes (15). Many inventions have been in the nature of a transformation of an existing object into one of different design, function, or use. It may be that this activity involves a combination of flexibility, analysis and synthesis, and that no additional hypothesis of redefinition is really needed, but the possibility must be investigated.

There is a possibility of a dimension of ability that has to do with the degree of *complexity* or of intricacy of conceptual structure of which the individual is capable. How many interrelated ideas can the person manipulate at the same time? The scientist must often keep in mind several variables, conditions, or relationships as he thinks out a problem. Some individuals become confused readily; they can keep only one or two items of structure delineated and properly related. Others have a higher resistance to confusion—a greater span of this type. Such an ability might be identifiable with the hypothesized synthesizing factor, but the study should make possible a separation of the two if the distinction is real.

Creative work that is to be realistic or accepted must be done under some degree of evaluative restraint. Too much restraint, of course, is fatal to the birth of new ideas. The selection of surviving ideas, however, requires some *evaluation*. In this direction there must be a factor or two. The evaluations are conceivably of different kinds, consequently the kinds of possible tests are numerous. In a paragraph of exposition, we may ask the examinee to say whether every underlined statement is best classified as a fact, a definition, or a hy-

pothesis. He will, to be sure, need some preliminary instruction in these distinctions. In another test, we can present him with a stated problem, then ask him which of several items are relevant to its solution and which ones are not. In still another test, we can give a problem and several alternative solutions, all correct. The examinee is to rank the solutions in the order of degree of excellence or fitness.

The hypotheses mentioned, as was stated earlier, refer more specifically to a limited domain of creative thinking more characteristic of the scientist and technologist. Even so, this entails a factorial study of substantial proportions. Similar studies will need to be made in the domains of planning abilities, in order to anticipate abilities more characteristic of the economic, the political, and the military leader. Still other restricted domains will need to be investigated to take care of the writer, the graphic artist, and the musical composer.

The question will inevitably arise, "How do you know your tests are valid?" There are two answers to this question. The first is that the factorial study of the tests is in itself one kind of validation. It will determine which tests measure each factor and to what extent. That is a matter of internal validity or factorial validity. It answers the question, "What does the test measure?" The second answer will be in terms of which factors are related to the creative productivity of people in everyday life. That calls for the correlation of factor measures with practical criteria. I feel very strongly that only after we have determined the promising factors and how to measure them are we justified in taking up the time of creative people with tests. If a certain factor we discover turns out not to be related to creative production, we have made a bad guess, but we will have discovered a new factor that may have some other practical validity. If a certain factor is not related to the criteria of creative productivity, the tests which measure it uniquely will also prove to be invalid for predicting these criteria. It is better to fail in the validation of a single factor measure than to fail in the validation of a half-dozen tests. If we make a study of the practical validity of every creative test we can think of before it is analyzed, we are bound to exert considerable wasted effort of our own and of our examinees. This statement, incidentally, applies to the validation study of any test.

Creative productivity in everyday life is undoubtedly dependent upon primary traits other than abilities. Motivational factors (interests and attitudes) as well as temperament factors must be significant contributors. Hypotheses concerning these factors in connection with creative people might be fruitful starting points for factorial investigations. The design of the research would be much the same as that described for creative abilities.

#### SUMMARY AND CONCLUSIONS

By way of summary, it can be said that psychologists have seriously neglected the study of the creative aspects of personality. On the other hand, the social importance of the subject is very great. Many believe that creative talent is to be accounted for in terms of high intelligence or IQ. This conception is not only inadequate but has been largely responsible for the lack of progress in the understanding of creative people.

The factorial conception of personality leads to a new way of thinking about creativity and creative productivity. According to this point of view, creativity represents patterns of primary abilities, patterns which can vary with different spheres of creative activity. Each primary ability is a variable along which individuals differ in a continuous manner. Consequently, the nature of these abilities can be studied in people who are not necessarily distinguished for creative reasons. Productivity depends upon other primary traits, including interests, attitudes, and temperamental variables.

It is proposed that a fruitful exploratory approach to the domain of creativity is through a complete application of factor analysis, which would begin with carefully constructed hypotheses concerning the primary abilities and their properties. It is suggested that certain kinds of factors will be found, including sensitivity to problems, ideational fluency, flexibility of set, ideational novelty, synthesizing ability, analyzing ability, reorganizing or redefining ability, span of ideational structure, and evaluating ability. Each one of these hypotheses may be found to refer to more than one factor. Some hypothesized abilities may prove to be identical with others or accounted for in terms of others. At any rate, these hypotheses lead to the construction of tests of quite novel types, which is a promising condition for the discovery of new factors. The

relation of such factors to practical criteria of creative performance will need to be established. It is likely that the tests have been aimed in the right direction.

Once the factors have been established as describing the domain of creativity, we have a basis for the means of selecting the individuals with creative potentialities. We also should know enough about the properties of the primary abilities to do something in the way of education to improve them and to increase their utilization. These ends certainly justify our best efforts.

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# PROCEEDINGS OF THE FORTY-SECOND ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY

JOHN B. WOLFE, *Secretary*

*University of Mississippi*

THE forty-second annual meeting of the Southern Society for Philosophy and Psychology was held at Nashville, Tennessee, April 6-8, 1950. All section and business meetings were held in the Noel Hotel. Vanderbilt University was the host institution. Local arrangements were under the direction of Dr. Stanford C. Erickson. The program committee consisted of Dr. Marion E. Bunch, Dr. Peter A. Carmichael, and Dr. John B. Wolfe, Chairman.

The Council of the Society met on the evening of April 6. It was presided over by Dr. Elizabeth Duffy. Members present were Marion E. Bunch, James H. Elder, Richard H. Henneman, Louis Kattsoff, Harold N. Lee, Herbert C. Sanborn, S. Rains Wallace, William S. Weedon, and John B. Wolfe.

Open meetings began Thursday evening with a philosophic propylaea and a psychological symposium on Motivation followed by an informal social hour and smoker sponsored by Vanderbilt University. Three sessions in philosophy, ten sessions in psychology, and a symposium on Graduate Training were held on Friday. On Saturday morning, there was a philosophy-psychology symposium on Perception. Chairman of this symposium was Herbert C. Sanborn. Chairmen of the philosophy sessions were George Boas, Harold N. Lee, Willis Moore and Edward T. Ramsdell. Chairmen of the psychology sessions were Donald K. Adams, James C. Calvin, Meredith Crawford, Karl M. Dallenbach, James H. Elder, Stanford C. Erickson, Harry M. Johnson, M. C. Langhorne, Elliott M. McGinnes, John Paul Nafe, S. Rains Wallace, and Joseph Weitz.

The Society's annual banquet was held Friday evening in the Ball Room of the Noel Hotel. Dr. Elizabeth Duffy delivered the presidential address entitled "The Concept of Energy Mobilization."

## MINUTES OF THE ANNUAL BUSINESS MEETING

President Duffy called the meeting to order. The minutes of the Forty-First Annual Business Meeting were approved with the exception of the action taken to require the Council to present to the 1950 Business Meeting three or more nominees for each vacancy in an office or in the Council. This requirement was voided by a vote of the members present.

The reports of the Secretary and of the Treasurer were read and approved.

Dr. Harold N. Lee reported for the Advisory Standing Committee. The Committee had studied the present method of nominating and electing Officers and Council Members and had considered certain possible changes. No recommendations were made, however.

Drs. Oliver L. Lacey and Harold N. Lee jointly presented to the meeting for action a year hence the following proposed amendment to the Constitution.

Strike out the second sentence in Article III, Section 4, and for it substitute the following:

The Council shall circularize the entire membership of the Society at the time of the call for papers requesting suggestions of names of persons to be put into nomination for vacant offices. In alternate years, the name of a philosopher, and in the intervening years, the name of a psychologist shall be called for President; and for Council vacancies, the name of one philosopher and one psychologist shall be called for. For each office, the Council shall put into nomination the name most frequently suggested by the membership together with one additional name chosen by the Council.

The first sentence of the present Article III, Section 4 shall stand as the first sentence of the amended section.

On recommendation of the Council eleven new associate members and forty-four members were elected to the Society. The associates are: Charles

Purcell Bigger III, Lee S. Caldwell, Robert Dwight Dugan, Lewis Allen Foster, Jr., Judd Walter Lewis, William Bryan Martin, James Reese McKeldin, George Middleton, Jr., Travis Dean Rawlings, Morris Steinberg, Gabriel Aaron Zimmerman.

The full members are: Carol Hamrick Ammons, Richard Bradshaw Angell, Clinton Cornelius Armstrong, Fred Attneave III, Bernard Morris Bass, Raymond Curtis Bice, Jr., Marcus B. Caldwell, Constantine Peter Cavarnos, Louis David Cohen, Thora Hickerson Crowder, Gertrude Stewart Ekas, Robert Glaser, John W. Gustad, Andrew Williams Halpin, Edward Walker Hargrave, Richard Boyle O'Reilly Hocking, William Paul Hurder, Jessie Frank Irvine, John Alexander Jensen, Eugene Robert Long, Ernest Meyers, John Baird Morris, Jay Byron Mowbray, Kenneth Evan Mowyer, Glenn Negley, Alvin Fredolph Nelson, Frank Acklen Pattie, John Noble Phillips, Lynne Starling Reid, Robert Lincoln Rein'l, Christopher Verney Salmon, Wallace Brown Scherer, Gerrit Schipper, Paul F. Secord, Julian Cecil Stanley, Jr., Stanley C. Skiff, Calvin Rudolphus Stevenson, Donald Marberry Taylor, Willard Rowand Thurlow, Loh Seng Tsai, Roy Roland Ullman, Paul Kenneth Vonk, Paul Welsh, David Cron Yalden-Thompson.

Action of the Council to publish the Yearbook in alternate years was reported to the members. A

motion from the floor was made to have the "changes-in-addresses" issued for the alternate years when the directory was not to be published. The motion carried.

The Council recommended that the Society accept the invitation of Washington and Lee University to meet at Hotel Roanoke, Roanoke, Virginia, in 1951. The recommendation was approved.

Upon recommendation of the Council the following officers and council members were unanimously elected by the Society: President, Lewis M. Hammon; Secretary, D. Maurice Allan; Council members, Stanford C. Erickson and Gerard Hinrichs. Richard H. Henneman continues as Treasurer.

The following resolution was approved without opposition.

Be it resolved that the membership of the Southern Society for Philosophy and Psychology place itself on record as endorsing the stand of the Faculty and the President of the University of California against special loyalty oaths or tests for teachers; and be it further resolved that the secretary of our organization be ordered to transmit copies of this resolution to the appropriate representative of the Faculty and to the President of the aforementioned University.

The Society, on motion by the Secretary, went on record as extending its thanks to Vanderbilt University and to the Noel Hotel for their hospitality. The meeting was then adjourned.

## PROGRAM

### Thursday Evening

#### Philosophy, Philosophic Propylaea

GEORGE BOAS, *Chairman*

The fringe of philosophy. QUINTER M. LYON, *University of Mississippi*.

Trends in objectives for the general introduction course. GERARD HINRICHES, *Tulane University*.

Report on the teaching of philosophy. JOHN HENRY MELZER, *University of Kentucky*.

Open Forum.

#### Psychology, Symposium, Motivation

STANFORD C. ERICKSEN, *Chairman*

SIGMUND KOCH, *Duke University*.

T. ERNEST NEWLAND, *University of Tennessee*.

LLEWELLYN QUEENER, *Southwestern at Memphis*.

### Friday

#### Philosophy

WILLIAM MOORE, *Chairman*

Montaigne and modern philosophy. EDGAR H. HENDERSON, *Florida State University*.

Martin Buber's social concept of the self. PAUL E. FUETZE, *University of Georgia*.

Concerning the human person in Romero's philosophy. MARJORIE S. HARRIS, *Randolph-Macon Woman's College*.

A report of the East-West Philosophers' Conference held at the University of Hawaii, Summer 1949. WILLIAM S. WEEDON, *University of Virginia*.

The current revival of natural teleology. D. MAURICE ALLAN, *Hampden-Sydney College*.

Dewey's theory of the state. RUBIN GOTESKY, *University of Georgia*.

**Psychology, Section A, Perception 1**JOHN PAUL NAFE, *Chairman*

Brand discrimination among cigarette smokers. M. R. MARKS, C. K. RAMOND, and L. H. RACHEL, *Tulane University*.

Displacement in ESP card tests in relation to hits and misses on the assigned targets. J. G. PRATT, *Duke University*.

Reaction times for free and controlled word association. ERNEST MEYERS and J. S. CALVIN, *University of Kentucky*.

Perception of the vertical as a function of acceleratory forces and visual factors. CLIFF W. WING, JR., and GEORGE E. PASSEY, *Tulane University*.

Perception of the visual horizontal when in positions of bodily tilt. DAN B. JONES, JR., *Tulane University*.

Visual and somesthetic components of the oculogyral illusion. CECIL W. MANN, *Tulane University*.

An investigation of the autokinetic phenomenon in various age groups. JOHN B. MORRIS, *University of Mississippi*.

Consistency of a frame of reference of a unit scale value in the estimation of small lateral distances. JOHN R. HARMAN, JR., *Vanderbilt University*.

**Psychology, Section B, Learning**MEREDITH CRAWFORD, *Chairman*

The role of isolation in spread of effect. WILLIAM B. MARTIN, *University of Kentucky*.

An investigation of the effects of varied amounts of loss of sleep on some aspects of mental functioning, particularly learning ability. TRAVIS RAWLINGS and ERNEST MEYERS, *University of Kentucky*.

Place and response learning under procedurally "purified" conditions. C. W. HILL, *Vanderbilt University*.

Rotary pursuit hits with distributed practice. ROBERT B. AMMONS and CAROL H. AMMONS, *University of Louisville*.

Relational learning in the rat. M. E. BITTERMAN, *University of Texas*.

Reactive inhibition as a function of number of response evocations. PAUL S. SIEGEL, *University of Alabama*.

Effects of glutamic acid upon activity level in white rat. LOH SENG TSAI, *Tulane University*.

Insight in the white rat; an experimental artifact. GEORGE GENTRY, *University of Texas*.

**Psychology, Section C, Personality and Social**JAMES H. ELDER, *Chairman*

Insight of college students into the personality of their instructor. ORRIN H. CROSS and MILDRED B. CROSS, *University of Alabama*.

The relation of hand strength to certain personality measures. JOSEPH E. MOORE and NORMAN H. STURM, *Georgia Institute of Technology*.

Relationships between test score and the consistency of response pattern on certain psychological tests. ROBERT GLASER, *University of Kentucky*.

Personality correlates of typical dreams: a statistical method and sample results. RICHARD M. GRIFFITH, *University of Kentucky*.

Some relationships between personality traits and learning ability. STANLEY C. SKIFF, *University of Richmond*.

A study of the relation between closure behavior and levels of personality integration. MORRIS ROSEMAN, *VA Hospital, Lexington, Kentucky*.

The concept of psychological maturity: a critical evaluation. ELLIOTT McGINNIES and PATRICK COMER, *University of Alabama*.

**Philosophy, Ethics, Aesthetics, Value Theory**EDWARD T. RAMSDELL, *Chairman*

The nature of ethical inquiry. E. M. ADAMS, *University of North Carolina*.

Moral and legal imperatives. GLENN NEGLEY, *Duke University*.

An analysis of some ethical presuppositions. WARREN ASHBY, *Woman's College, University of North Carolina*.

The elements of an aesthetic theory. EDWARD G. BALLARD, *Tulane University*.

The philosophic advance of higher technology. BRYANT S. COOPER, *University of Florida*.

The objective basis of values. IREDELL JENKINS, *University of Alabama*.

**Psychology, Section D, General**KARL M. DALLENBACH, *Chairman*

Catinua, catermensions, catescales. FRANK M. DU MAS, *Washington, D. C.*

The problem of repeated measurements in covariance analysis. OLIVER L. LACEY, *University of Alabama*.

Some significant semantic principles neglected in co-relational analysis. CHRISTIAN P. HEINLEIN, *Johns Hopkins University*.

Verbal stereotypes as a function of the perceptual field. DONALD M. TAYLOR, *Vanderbilt University*.

#### Symposium. Graduate Training in Psychology

DONALD K. ADAMS, *Chairman*

MARION E. BUNCH, *Washington University*.

RICHARD H. HENNEMAN, *University of Virginia*.

OLIVER L. LACEY, *University of Alabama*.

CECIL W. MANN, *Tulane University*.

#### Philosophy, Logic, Methodology, Metaphysics

HAROLD N. LEE, *Chairman*

Some reflections on the concept of strict implication. ROBERT L. REIN'L, *Louisiana State University*.

Formalism of terminist logic in the Fourteenth Century. LOUISE NISBET, *Newcomb College*.

A doctrine of symbolism. H. M. JOHNSON, *Tulane*. Dingler's methodical philosophy. HERBERT C. SANBORN, *Vanderbilt University*.

Metaphysics psychology, and the singular. ALBERT G. A. BALZ, *University of Virginia*.

Cartesian dualism and scientific presuppositions. LAURENCE J. LAFLEUR, *Florida State University*.

#### Psychology, Section E, Applied

S. RAINS WALLACE, *Chairman*

Limitations of the Bernreuter Personality Inventory in selection of supervisors. CHARLES P. SPARKS, *Tulane University*.

The measurement and prediction of student interest in natural science subjects. SAM C. WEBB, *Emory University*.

Differential prediction of grades in a school of engineering. PHILIP H. DUBois, *Washington University*.

A comparison of verbal and pictorial questionnaires in market research. JOSEPH WEITZ, *Carnegie Institute of Technology*.

A comparison of the reliabilities of ratings by leaderless group discussion observers and individual

interviewers. BERNARD M. BASS, *Louisiana State University*.

The applications of phenomenological psychology to the psychology of consumer relations. E. B. COBB, *University of Tennessee*.

#### Psychology, Section F, Perception 2

JAMES S. CALVIN, *Chairman*

The effect of training in monocular depth perception. M. R. MARKS and F. K. COLE, *Tulane University*.

The influence of visual stimulation on habituation to rotation. F. E. GUEDRY, JR., and R. H. BROWN, *Tulane University*.

The effect of practice on the perception of obstacles by the blind. PHILIP WORCHEL and JACK MAUNHEY, *University of Texas*.

Further investigations of the Müller and Aubert phenomena. GEORGE E. PASSEY, *Tulane University*.

Divided attention as a factor determining the relative advantages of visual and auditory message presentation. RICHARD H. HENNEMAN, *University of Virginia*.

The effect of speed-up on the intelligibility of auditory speech patterns. WILLIAM D. GARVEY, *University of Virginia*.

Vestibular sensitivity in the deaf. (A 12-minute film.) KARL M. DALLENBACH and PHILIP WORCHEL, *University of Texas*.

#### Psychology, Section G, Abnormal and Clinical

ELLIOTT M. McGINNIES, *Chairman*

An abstract of a note on Beck's organization response. HAROLD M. CORTER, *North Carolina State College*.

Emotional and rational disorders: their common pathology. H. L. PARSONS, *University of Tennessee*.

Chance and the Szondi Test. IRVING A. FOSBERG, *VA Hospital, New Orleans*.

Psychodynamic variables in the classification of abnormal behavior. FRED Y. BILLINGSLEY, *Tulane University*.

Rorschach factors associated with psychiatric judgments of "ego strength" in schizophrenia. GEORGE E. COPPLE and BARBARA PALMER, *Vanderbilt University*.

Goal setting in patients with certain chronic medical disorders. LOUIS D. COHEN, *Duke University*.

An examination of some of the aspects of carbon dioxide narcosis therapy. CHARLES P. POOLE, *Central Michigan College of Education*.

An experimental study of effects of ECT on MMPI scores. GEORGE F. MCCOV, JR., *University of Tennessee*.

Effects of infant perturbation on behavior of adult rats. WILLIAM J. GRIFFITHS, JR., *University of Mississippi*.

Sound-induced seizures in rats fed an amino-acid deficient diet. WILLIAM BEVAN, JOHN S. HARD, and OLIE S. SEAL, *Emory University*.

#### **Psychology, Section H, Retention**

M. C. LANGHORNE, *Chairman*

Absence of reminiscence in the serial learning of adjectives. CLYDE E. NOBLE, *State University of Iowa*.

An ideal derived equation for a class of forgetting curves. IVAN D. LONDON, *Tulane University*.

Changes in retention in albino rats following exposure to three degrees of anoxia. WILLIAM P. HURDER, *Louisiana State University*.

Ebbinghaus-curve in white rats. DANIEL V. TAUB, *Alabama University* and LOH SENG TSAI, *Tulane University*.

#### **Psychology, Section I, Psychology and Education**

H. M. JOHNSON, *Chairman*

Psychology in the engineering curriculum. B. von HALLER GILMER and HARRY W. KARN, *Carnegie Institute of Technology*.

The effectiveness of limited training in higher level study skills in an educational psychology course. WILLIAM COLEMAN, *University of Tennessee*.

A study of corporal punishment in the public schools of Georgia. JAMES E. GREENE, R. T. OSBORNE, and HIRAM GROGAN, *University of Georgia*.

#### **Psychology, Section J, Attitudes**

JOSEPH WEITZ, *Chairman*

Aggressive responses in the doll-play of preschool age boys. CAROL H. AMMONS and ROBERT B. AMMONS, *University of Louisville*.

A comparison of the racial attitudes of white and Negro high school students in 1940 and 1948. GEORGE DOUGLAS MAYO, *Birmingham-Southern College*.

A study on the relation of attitude to the learning process. GLORIA G. COMMONER, *Washington University*.

The relation between attitudes (toward the Negro) and projected behavior. ALFRED O. HERO, *Vanderbilt University*.

Some interrelations between ethnic and religious attitudes of Southern college students. E. TERRY PROTHRO, *University of Tennessee*, and JOHN A. JENSEN, *Alabama Polytechnic Institute*.

Development of a liberal attitude toward the Negro in a southern state. KEY L. BARKLEY, *North Carolina State College*.

#### **Annual Banquet**

Presidential Address: The concept of energy mobilization. ELIZABETH DUFFY, *The Woman's College, University of North Carolina*.

#### **Saturday Morning**

##### **Symposium on Perception**

HERBERT C. SANBORN, *Chairman*

GEORGE BOAS, *Johns Hopkins University* (representing philosophy).

KARL S. LASHLEY, *Yerkes Laboratory of Primate Biology* (representing psychology).

CHARLES A. BAYLIS, *University of Maryland*. Critical remarks on Professor Boas' paper.

KARL E. ZENER, *Duke University*. Critical remarks on Professor Lashley's paper.

#### **Annual Business Meeting**

##### **OFFICERS OF THE SOCIETY**

Elizabeth Duffy, <i>Woman's College</i> ,	
University of North Carolina . . . . .	President
John B. Wolfe, <i>University of Mississippi</i> . . . . .	Secretary
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The President, Secretary and Treasurer (*ex-officio*)

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Program Committee: Marion E. Bunch, Peter A. Carmichael, John B. Wolfe, Chairman

Committee on Arrangements: Stanford C. Erickson, Chairman

*Received May 3, 1950*

# PROCEEDINGS OF THE THIRTIETH ANNUAL MEETING OF THE WESTERN PSYCHOLOGICAL ASSOCIATION

M. BRUCE FISHER, *Secretary-Treasurer*

*Fresno State College*

THE thirtieth annual meeting of the Western Psychological Association was held at the Santa Barbara College of the University of California, on Thursday evening, Friday and Saturday, April 27, 28, and 29, 1950. More than 500 people were in attendance. Ninety-three papers were read in thirteen sessions. Five other special meetings (noted below in the program) were held, in addition to the business meeting and the banquet.

The local Committee on Arrangements was composed of members of the faculty of Santa Barbara College and other members of the Association in Santa Barbara, under the chairmanship of William D. Altus.

More than 200 people attended the banquet Friday evening. Floyd L. Ruch, the retiring president, delivered the address: "Trends in Student

Interest in Psychology." Guests of honor at the banquet were Dr. Henry L. Goddard and Dr. and Mrs. Truman L. Kelley.

At the business meeting the following officers were elected for 1950-51: president, Maud A. Merrill, Stanford; vice-president, M. A. Wenger, California (Los Angeles); secretary, David Krech, California (Berkeley); treasurer, Donald W. Taylor, Stanford. Since the meeting Dr. Krech has declined the secretaryship, since he will not be on the west coast next year. The Executive Committee has therefore designated Brant Clark of San Jose State College to serve in his place.

The Association accepted the invitation of San Jose State College to hold its 1951 meeting at San Jose on April 27 and 28.

## PROGRAM

Thursday Evening, April 27

### Joint Symposium

Selection of Hypotheses in Projective Techniques  
for Experimental Investigation

BRUNO KLOPFER, *Chairman*

Participants: Bertram R. Forer, William M. Wheeler, John P. Seward, Evelyn Troup

Arranged by the Southern California and Northern California Divisions of the Society for Projective Techniques, and the Western Psychological Association.

Friday Morning, April 28

### 1A: Experimental I

M. A. WENGER, *Chairman*

The error term in the analysis of variance. LLOYD G. HUMPHREYS, *Stanford University*.

In the use of the analysis of variance by experimental psychologists for data involving correlated means, it will frequently be found necessary to use more than one error term for the separate tests of significance desired. The correct term can always be ascertained by reference to the form of the t-test for the same data.

A study of early size-constancy by representative design. WILLIAM F. DUKES, *University of California (Berkeley)*.

A boy, age six, perceptually equated random objects at random distances ( $n = 67$  pairs). Obtained correlations were high (.991) for measured bodily sizes, close to zero for corresponding retinal sizes. This quantitative evidence of distal focusing agrees substantially with comparable data from an adult in Brunswik's original application of "representative design," and supports developmental findings from traditional systematic experiments.

Effect of satiation on the use of a habit. JOSEPH H. HANDLON, *University of California (Berkeley)* and JOHN P. SEWARD, *University of California (Los Angeles)*.

Two groups of 14 rats each, satiated, were matched for position preference in an enclosed T-maze. They then had four forced trials a day, two each way, for 10 days, thirsty. Group E found water on the non-preferred side, group C none. In a second satiated preference test group E, but not C, shifted significantly to the non-preferred side.

The role of drive in reinforcement. NISSIM LEVY and JOHN P. SEWARD, *University of California (Los Angeles)*.

Two groups of 16 rats each, satiated, were matched for preference in a T-maze. They then had four forced trials a day for 12 days, six thirsty and six satiated, water on both sides. Group E went non-preferred thirsty, preferred satiated; group C half and half. In a second satiated test group E alone shifted significantly to the non-preferred side.

The differential effects of simultaneous and successive stimulus presentation on transposition. ROBERT A. BAKER and DOUGLAS H. LAWRENCE, *Stanford University*.

Albino rats under simultaneous and successive presentation of stimuli were taught simple size discrimination problems. The equated groups were then tested for the transposition phenomenon. It was found subjects who were simultaneously trained demonstrated transposition, whereas subjects successively trained did not. The transposition phenomenon is interpreted as dependent upon situational cues made distinctive through certain training procedures employed.

Brightness discrimination and transposition with single and paired stimulus presentations. IRVING MALTZMAN, *University of California (Los Angeles)*.

The relative effectiveness of single versus paired stimulus presentations on the rate of brightness discrimination learning and the degree of subsequent transposition was compared on a single choice Y-maze. Significantly fewer reinforcements were required by the single presentation group to reach the criterion of learning. Neither group showed a significant amount of transposition.

A study of continuity-discontinuity learning on the T-maze placed in a homogeneous setting. HUGH C. BLODGETT, *University of California (Los Angeles)* and RAVENNA MATHEWS, *University of Texas*.

Rats responding correctly on a T-maze in terms of a light discrimination "hypothesis" quickly learn an incidental "turning disposition" when the correct turn is made a constant feature of the total situation. After continued practice on the maze (100 trials) with turn constant, however, the light "hypothesis" remains dominant over the "turning disposition."

The effect of learning within a single trial upon the measurement of transfer. EUGENE TALBOT and GEORGE E. MOUNT, *University of California (Los Angeles)*.

This study is designed to show the effects of learning within trials on the measurement of transfer of training. Using mirror tracing to determine the effect of practice with the preferred hand upon later performance with the non-preferred hand, the percent of transfer was found to be 30.4% when learning within trials is considered, and 9.87% when such learning is ignored.

Conditioning an autonomic response for determining absolute auditory intensity thresholds in the rat. JOHN H. JAMISON, *Stanford University*.

A conditioned decrement in heart beat using Pavlovian technique shows improved reliability as a response for measuring absolute auditory intensity thresholds in the rat. Ammonia gas was used as UCS and tone as CS. Response recording was made with an especially designed electrocardiograph. Thresholds decreased as frequency increased from 2 kc to 12 kc with a threshold at 12 kc lower than that for man.

#### 1B: Psychodiagnostics I

RUTH S. TOLMAN, *Chairman*

Temperament syndromes and temperament values. ROSWELL H. JOHNSON and LILLIAN WAAGE, *American Institute of Family Relations, Los Angeles*.

Three temperament syndromes are found: (a) a stress syndrome made up of nervous, depressive and low self-mastery, (b) a self-centered syndrome made up of subjective, critical, very highly ag-

gressive and low sympathy, and (c) a physiological deficiency syndrome made up of low active, low cordial and low aggressive.

A table of values, using success in marriage as a criterion, is shown.

The temperaments of the divorced. **SHIRLEY RAINES**, *American Institute of Family Relations*.

Significantly differentiating personality traits were discovered among the divorced when measured by the Johnson Temperament Analysis.

Both men and women in this group scored significantly high on the depressive, critical, and nervous traits and low on active and self-mastery traits.

In comparison with the premaritals, the divorced men were differentiated in six traits, while the women differed significantly in eight of the nine traits.

Personality correlates of Q-L differentials on the A.C.E. for college women. **WILLIAM D. ALTUS**, *University of California (Santa Barbara College)*.

A 43-item scale was derived from the group MMPI which correlated .63 with Q-L discrepancy scores on the A.C.E. for 200 criterion college females. A validation group of 100 additional college women yielded an *r* of .25. The Q-L discrepancy appeared to point toward greater conventionality, religiosity and, in general, immaturity, for women with higher Q than L scores.

The relationship of Wechsler-Bellevue patterns to psychiatric diagnosis of Army prisoners. **JERRY H. CLARK**, *University of California (Santa Barbara College)*.

Comparison was made of the Wechsler-Bellevue subtest patterning with three categories of psychiatric diagnosis of Army general prisoners: (a) no neuropsychiatric disorders; (b) immaturity reactions; (c) pathological personality types. In all groups, the verbal tests show a trend towards a minus deviation and the performance tests a plus deviation. In terms of the subtest patterning, the three nosological categories are more alike than different.

An experimental assessment of clinicians' understanding of case material in terms of explicit prediction. **JOSEPH LUFT**, *University of California (Los Angeles)*.

After listening to a case report (or reading an interview typescript), clinical team specialists attempted to predict how subjects would respond to objective and projective tests. Scores were obtained by comparing predicted responses with subjects' actual responses. Although clinicians' scores exceeded chance, they were not significantly different from prediction scores of a non-clinical control group.

Comments on "The Case of Gregor." **BRUNO KLOPFER**, *University of California (Los Angeles)*.

At the Denver APA meeting "The Case of Gregor" was presented, with six specialists interpreting some previously published test material on Gregor. Some technical issues in those interpretations are discussed: blind interpretation, emphasis on diagnostic pigeonholing versus personality dynamics, the agreement between various interpretations and the case history, and specific contribution to the total personality picture by various tests.

#### 1C: Social I

**ROBERT T. ROSS**, *Chairman*

The measurement of propaganda effectiveness.

**JACK K. HOWARD**, *Psychological Research Center and University of Southern California*.

The opinions of 500 respondents were obtained by survey in an attempt to determine the effectiveness of certain propaganda themes.

Ten themes were tested for circulation (number who had heard each), credibility (number who believed each), and influence (graduated scale of effect on voting plans).

The method yielded positive results and holds promise for the development of propaganda themes.

The determinants of opinion in a controversial issue.

**FRANKLIN FEARING** and **DANIEL M. WILNER**, *University of California (Los Angeles)*.

This study seeks to determine the relationships between answers to several key questions on a highly controversial issue, on the one hand, and on the other hand, a) opinion on certain factors involved in the issue, b) opinion as to what will happen if the controversy is solved in either direction, c) amount of self-rated understanding of the issue, d) amount of self-rated interest in the issue.

An attempt to modify certain attitudes and personality characteristics of prejudiced individuals by group psychotherapeutic methods. STEWART

B. SHAPIRO, *University of Southern California*.

From 468 college students, 48 subjects were chosen representing: (1) two variations of strong prejudice, (2) average prejudice, and (3) relative lack of prejudice. Experimental and control groups were tested before and after therapeutic sessions which included non-directive group discussion, play drama, group drawings and sociometric ratings. Statistically significant changes took place in the experimental group on personality variables but not on attitude scale variables.

A content analysis of Sunday comic strips: a study in a mass medium of communication.

MARVIN SPIEGELMAN, CARL TERWILLIGER and FRANKLIN FEARING, *University of California (Los Angeles)*.

This study applies the technique of content analysis to a mass medium with an audience of some fifty million. The purpose is to establish a method and shed some light on the communicative process; to describe the content of comics by means of 21 categories, such as reality level, portrayal of humans and animals, differences between "humor" and "adventure."

The definition of social areas. HUDSON J. BOND, *University of California (Berkeley)*.

A method is developed for the isolation of urban subcultures based upon the homogeneous patterning of neighborhoods upon social dimensions. These dimensions are obtained through a cluster analysis of selected census variables. The method has been applied to the San Francisco Bay region, and is one of various approaches to the subculture problem by R. C. Tryon and his associates.

Simple structure in ecological research. MAURICE CHORNESKY, *University of California (Berkeley)*.

The complete centroid method was applied to a matrix containing ecological variables. Factors were then rotated to oblique simple structure. The same matrix had previously been cluster analysed by H. J. Bond as part of a study being conducted by R. C. Tryon and associates. A comparison was therefore afforded between Tryon and Thurstone. Results reveal substantial agreement between factors and those clusters selected for interpretation.

Identity of social areas and psychological subcultures. ROBERT C. TRYON, *University of California (Berkeley)*.

Each of the 18 social areas of the Bay Region is made up of neighborhoods (census tracts) of people alike in patterns of 33 census indices covering population, work, and home characteristics. The hypothesis is held that they are equally homogeneous in patterns of psychological characteristics. The theoretical and quantitative rationale of this hypothesis and some preliminary tests of it are presented.

Friday Afternoon, April 27

#### 2A: General

JOHN P. SEWARD, *Chairman*

San Diego County Fair vision survey. MALCOLM LICHTENSTEIN and DONALD W. CONOVER, *U. S. Navy Electronics Laboratory, San Diego*.

Visual skills for a more random sample of the general population than has hitherto been machine-tested were measured with the Orthorater at the 1948 San Diego County Fair. Parameters studied include: acutities and phorias as functions of age and sex, monocular versus binocular acuties, and interrelations among sub-tests of acuity, phoria, depth and color. Certain theoretical implications are discussed.

Estimation of correlational relationships using the technique of sequential analysis. HARRY L. WOLBERS, JR., *Psychological Research Center and University of Southern California*.

A sequential technique, based on Wald's "Sequential Analysis," was devised to indicate correlational relationships between variables as a sample of cases accumulated. Results indicate that correlation values between variables may be estimated to an accuracy of 1% when compared with correlation coefficients derived by conventional means. About one-half of the cases needed in conventional methods are required in this sequential estimation procedure.

Licensing psychologists in San Diego. IVAN N. McCOLLOM, *San Diego State College*.

A campaign sponsored by the Mental Hygiene Association of San Diego and a local daily newspaper against the practice of psychology in that city by unqualified persons resulted in the passage

of a city ordinance establishing a Commission to screen applicants for a municipal license as psychologist. This has resulted in raising standards of psychological practice within the city.

Psychologists' biases on psychology courses. HILDING B. CARLSON, *San Diego State College*.

The inverted factor technique was applied to ratings by the staff members of the Department of Psychology at San Diego State College of its course offerings in regard to four departmental sequences—non-professional, pre-Personnel, pre-Clinical, and Theoretical-Experimental. Three factors account for the intercorrelations: (1) a theoretical bias, (2) a school-administration bias, and (3) a clinical bias.

Self ratings on personal adjustment and their relationship to scores for self and projected "average" scores on a personality test. ROBERT L. HOFFMAN and GEORGE F. J. LEHNER, *University of California (Los Angeles)*.

Study of the relationships among adjustment scores for self, adjustment scores assigned to the "average" person, and self-ratings on adjustment indicates significant differences between the means of the self-ratings, of the self scores, and the assigned "average" scores. The implications of these results are discussed in relation to insight, the self-concept, and neuroticism.

Further studies in self-perceptions. J. F. T. BUGENTAL, *University of California (Los Angeles)*.

The "Who Are You" technique is employed with over one hundred non-student adults on an interview (rather than group) basis. Responses are compared with earlier-reported group-derived trends from students and non-students. Preliminary hypotheses regarding the influences of age, sex, marital status, occupation and education are offered. A start is made on the problem of the valuation of self-percepts.

A preface to a psychological analysis of the self. THEODORE R. SARBIN, *University of California (Berkeley)*.

This preface attempts to integrate various conceptions of the self into a unified framework. A fruitful conceptual aid is the notion of epistemogenesis which deals with the development of the inferred self from empirical selves.

## 2B: Applied

C. W. BROWN, *Chairman*

A checklist for telephone operators. JAY T. RUSMORE, *San Jose State College*.

The job of outward toll operator was analyzed. With 46 job components in checklist form, the reliability of composite judgment by chief operators in groups of three was indicated by an average corrected  $r$  among judges of .80. Forty statements added to the checklist confirmed the prediction of the Spearman-Brown formula by raising the reliability coefficient to .89.

The development of performance tests in the evaluation of achievement. CLARK L. WILSON, JR., *Psychological Research Center and University of Southern California*.

A series of short performance tests has been used in assessing the performance of submarine electrician's mates. The relationship between performance and written tests is being explored in Navy schools. Results are given for about one hundred presently assigned electrician's mates and fifty school graduates.

The use of a check list in evaluating performance of electrician's mates aboard submarines. JAMES H. MYERS, *Psychological Research Center and University of Southern California*.

An 84-item check list of electrical tasks was administered to 57 men aboard 11 submarines. Rating was done by officers. The results were subjected to an internal consistency item analysis. Items were later validated against performance on selected tasks fundamental to the electrician's trade.

Description of a performance rating scale designed to evaluate U. S. Navy personnel. JAMES T. PARKINSON, JR., *Psychological Research Center and University of Southern California*.

A rating scale has been developed in which each trait rather than each man occupies a page. All men are rated in one trait at a time instead of one man being rated in all traits at one time. This procedure reduces many rating difficulties and makes possible the use of fundamental techniques of ranking and/or paired comparisons.

The reliability, objectivity, and factor structure of a performance rating scale developed to

evaluate U. S. Navy personnel. ROBERT R. MACKIE, *Psychological Research Center and University of Southern California.*

The statistical analyses of a performance rating scale which was administered to two submarine populations ( $N_1 = 187$ ,  $N_2 = 286$ ) are given. Inter-rater agreement on the total scale was above .7. Rate re-rate reliability (eight months period) was .87. Inter-trait correlations were high, but several meaningful factors were extracted even when the influence of job experience (pay grade) was minimized.

Adaptation of a test of relative motion for use with enlisted Navy personnel. STANLEY DEUTSCH, *U. S. Navy Electronics Laboratory, San Diego.*

A test of ability to visualize the relative motion of objects (ships) in space, originally designed for Navy officers, was revised and adapted for use with enlisted personnel. Use of the introspective method in determining psychological processes employed by different individuals in solving the problems, when combined with statistical analysis, contributed materially to developing a satisfactory test.

Prediction of accident proneness of motorcycle operators. PAUL C. BUCHANAN, *Los Angeles Regional Office, Veterans Administration.*

Test batteries were selected by multiple regression and cutting score methods on 124 motorcycle operators and predictions made of accident rates of 85 new operators. Effectiveness of prediction is reported for each method in terms of differences between mean accident rates and proportions of accident free operators. Results encourage use of the tests in question for predicting accident proneness.

## 2C: Experimental II

HUGH C. BLODGETT, *Chairman*

Studies of human adaptation to centrifugal force.

I. Visual perception of the horizontal. BRANT CLARK, *San Jose State College*, and ASHTON GRAYBIEL, *Naval School of Aviation Medicine and Research.*

Four subjects were rotated on a human centrifuge while facing the direction of rotation. They observed a horizontal line in the dark and reported its apparent rotation or maintained it in a horizontal position throughout the trials. The settings of

the line closely approximated the deviation of the resultant force acting on the subject, but adaptation was not found.

Psychological research on the University of Southern California human centrifuge. NEIL D. WARREN, *University of Southern California.*

Research under Office of Naval Research Contract N6 ori77, Task Order 3, is concerned with both theoretical and practical aspects of the effects of positive radial acceleration ( $g$ ) on human subjects. The centrifuge permits application of controlled amounts of  $g$  to (and beyond) the limits of human tolerance. These forces simulate those experienced by flyers during certain maneuvers of the airplane. Results have applicability to problems of aircraft design and to psychophysiological theory.

The effect of increased positive radial acceleration on the speed and accuracy of reaching movements. NORMAN E. WILLMORTH and GERALD ALLEN GREEN, *University of Southern California.*

Purpose: To compare speed and accuracy of reaching movements for up, down, right, and left target positions at increased  $g$ -levels.

Results: Reaction and movement times increase, and accuracy decreases, significantly, with increased  $g$ . Errors of underestimation and negative-inertia determined the position of strikes on the targets.

Conclusion: That emergency controls be at the right, and below, shoulder-level, and over two inches in diameter.

An investigation of certain after-effects of prolonged exposure to positive radial acceleration.

GLENN L. BRYAN, *University of Southern California.*

An investigation of relatively long-lasting after-effects of prolonged exposure to moderate  $g$  intensities. A test battery was constructed on the basis of interviews with flight personnel. This battery was administered to a control group (1.5  $g$ ) and an experimental group (3  $g$ ) immediately before and after rotation.

Results: No significant differences, attributable to  $g$ , between groups or between prior- and post-exposure scores.

The effect of increased positive radial acceleration on perceptual speed and spatial orientation abili-

ties. ROBERT C. WILSON, *University of Southern California.*

Perceptual Speed Ability and Spatial Orientation Ability were studied using test items adapted from the Guilford-Zimmerman Aptitude Survey and the AAF Discrimination Reaction Time Test. Test items were administered to subjects at  $lg$  and under conditions of increased  $g$ . Results indicate no significant change in these abilities attributable to increased  $g$  forces below the blackout threshold.

On the frequency separation limits of monotic and diotic beats. PAUL O. THOMPSON, *U. S. Navy Electronics Laboratory, San Diego*; J. C. R. LICKLIDER, *Psycho-Acoustics Laboratory, Harvard University*, and JOHN C. WEBSTER, *U. S. Navy Electronics Laboratory, San Diego.*

A study of the critical frequency separation between two tones where any decrease in separation would result in interaction (auditory beats). The critical separation was found to approximate 30 c.p.s. at very low frequencies, increasing gradually to approximately 300 c.p.s. at the higher frequencies (4,000 to 7,000 c.p.s.). Secondary factors found to be influential included loudness, inter-observer differences, and one-ear versus two-ear listening.

A measure of the accuracy of rhythmic tapping. J. M. STROUD and J. M. HEDLUN, *U. S. Navy Electronics Laboratory, San Diego.*

Measures of "date" and accuracy of motor response from reported reaction times are compared with our measures. We postulate that responses result from predictions based on rhythmic sampling of stimuli. At rates of 8 to 10 per second, three subjects predicted 40 consecutive "dates" with a 5-millisecond root-mean-square variation as compared with 25-milliseconds reported in reaction times.

#### 2D: Educational

JERRY H. CLARK, *Chairman*

Revised ventures in group vocational guidance.

CHARLOTTE D. ELMOTT and WINIFRED H. LANCASTER, *Santa Barbara City Schools.*

An experiment in vocational guidance at Santa Barbara High School, California, a Psychology course with test batteries was offered 48 selected seniors; other seniors participated in informal discussion sessions. Among the 48, of the half with previously defined goals, one-third changed their

minds; of those without goals, two-thirds reached some decision. Indecisiveness and high MMPI scores were correlated.

Psychotherapy in adult education. DAVID H. RUJA, *Los Angeles State Mental Hygiene Clinic.*

The adult evening school psychology student is seeking in most instances help for an emotional problem.

An attempt has been made to meet this need on the assumption that psychotherapy is a variable procedure.

Three levels of psychotherapeutically-oriented situations are offered: (1) Class discussion of structured material. (2) Group discussion with spontaneous material. (3) Individual consultations.

Group research projects as a teaching device. IRVING R. WESCHLER and EUGENE A. COGAN, *University of California (Los Angeles).*

The authors presented the results of group research by ninety-four unselected students in a "Psychology of Advertising and Selling" class, showing that meaningful research contributions can be obtained without previous formal training in scientific methodology. Of twenty-eight different projects turned in, five were abstracted as illustrations. These were evaluated on the basis of their "originality," scientific thinking, simplicity and significance.

Comparison of audio-visual aids needed in teaching clinical psychology with those needed in psychiatric nurse training. ELIAS KATZ, *U. S. Naval Disciplinary Barracks, San Pedro.*

This is a preliminary report of agreements and differences among the findings from two questionnaire surveys of audio-visual aids needed (a) for teaching of clinical psychology, and (b) for psychiatric nurse training. The clinical psychology survey findings have been published (*Psychol. Bull.*, 1950, 1947, 137-145). Companion surveys of needs for audio-visual aids in teaching psychiatric social work, psychiatry, and related fields are in progress.

Selecting test batteries for trainees in auto mechanics and apparel design. GLENN C. MARTIN, *Santa Monica City College.*

Using instructors' ranks of present trainees as criteria of success in training courses, the author

calculated multiple R's on tests which correlated above the 5% level of confidence with a criterion. Tests which accounted for 5% or more of the variance in the criterion were retained as a tentative battery, and are being verified as predictors of success in training.

An analysis of certain aspects of employee handbooks. WILLIAM H. E. HOLMES, Jr., *Oregon State College*, and GEORGE M. TURMAIL, *Ball State College*.

The employee handbook is one of the means of communication in use between management and employees. Eighty-four currently used handbooks were obtained from various business and industrial firms throughout the country, and each was analysed for content, readability, and human interest. The handbooks differed widely in content and amount of graphic material. Over half of the handbooks were too difficult for their intended readers.

Saturday Morning, April 29

### 3A: Genetic and Religious

JEAN W. MACFARLANE, *Chairman*

Children's spontaneous classroom paintings as a key to emotional disturbances. BEATRICE LANTZ, *Los Angeles County Schools*.

Spontaneous classroom calcimine or finger paintings have clinical significance in revealing emotional disturbances. Twenty-five children of grades kindergarten through fifth whose emotional disturbances were expressed in painting have been followed over a five-year period. Aggression, anxiety, perfectionism, and schizoid tendencies as well as temporary mood deviations are clearly indicated.

Mothers' child-training preferences and children's ethnic attitudes. HARRISON G. GOUGH, *University of California (Berkeley)*; DALE B. HARRIS, *University of Minnesota*, and WILLIAM E. MARTIN, *University of Illinois*.

Comparison of the child-training preferences of mothers of more and less prejudiced children in two Minneapolis grade schools revealed a number of significant differences. In general, mothers of more prejudiced children were less accepting, more punitive, less consistent, and more authoritarian. These findings tend to underscore the interrelationship between specific social attitudes and broader personality characteristics.

Some increasing parent-child similarities during the growth of children. NANCY BAYLEY, *University of California (Berkeley)*.

Berkeley Growth Study children are compared with their parents (from 40 to 61 children). Children's heights and weights show a general tendency to increase in correlation with their parents' heights and weights as the children grow. This trend and the trend of increasing r's between children's IQ and parental ability are attributed to the gradual manifestation of inherited similarities.

A study of emotional contexts. HAROLD E. JONES, *University of California (Berkeley)*.

108 words covering a broad range of affective content were administered in a series of nine galvanometer experiments (over a four year period). A public school sample was used, consisting of approximately 40 boys and 40 girls. Results are analyzed in terms of age changes in GSR, sex similarities and differences, and the development of differential responses to specific stimuli.

Equating scores on three intelligence tests. LLEWELLYN N. WILEY, *University of California (Los Angeles)*.

Tables comparing 2,669 scores on the Wechsler, A.C.E., and California Mental Maturity were prepared by the VA Guidance Center of the University of California (Los Angeles). Breakdowns by three age and three educational levels showed that all tests displayed significant decrements in performance scores and consistent (though insignificant) increases in verbal scores with advancing age.

The differential decline of Wechsler subtest scores in 60-69 year old individuals. CHARLOTTE FOX, *National Heart Institute, National Institutes of Health*, and JAMES E. BIRREN, *Gerontology Section, Baltimore City Hospitals*.

The order of decline of mean subtest weighted scores of the Wechsler-Bellevue Intelligence Scale subtests was determined for 50 persons aged 60-69. Significant differences were found among subtest scores, though adjacent-ranked subtests did not in general differ significantly in mean score. Information, Vocabulary, and Comprehension showed least decline, while Block Design, Picture Arrangement, and Digit Symbol showed greatest decline.

Empirical psychological studies of religion: A survey. JACK L. MICHAEL, *University of California (Los Angeles)*.

All abstracts indexed under "Religion" (1,110 in all) in the first 22 volumes of the *Psychological Abstracts* were read. One hundred and twenty-five of these were considered empirical. These empirical studies were classified on the bases of main area of investigation, level of analysis, and sources of data. Some conclusions on the forms of research in the psychology of religion are suggested.

Attitude on religion, sex, and love-marriage as related to group membership. ROBERT L. KAREN, *University of California (Los Angeles)*.

College students were given the Allport-Vernon study of values, a sentence completion test, and a personal questionnaire.

An attempt was made to examine the relationship between the individual's membership in various groups (i.e., sorority-fraternity, veteran, and major field of study) and his religious values. In addition, the investigation examined the attitudes of the students on sex and love-marriage.

Relationship between religious participation and rejection of parental figures. F. HAROLD GIEDT, *University of California (Los Angeles)*.

This is an investigation of the nature of the relationship, if any, between the degree of acceptance or rejection of parental and authority figures and a) measures of participation in religious activities and b) importance to the individual of the religious value. Incomplete sentences were used to get at these attitudes in 200 subjects. Their extent of participation in religious activities was measured by entries on a personal data sheet.

### 3B: Experimental III

NEIL D. WARREN, *Chairman*

Autonomic balance in dysmenorrhea. M. A. WENGER, *University of California (Los Angeles)*.

To test the hypothesis that women with dysmenorrhea demonstrate autonomic imbalance with sympathetic predominance, 19 subjects were compared with 15 controls on 14 autonomic variables. No significant differences were found in autonomic balance, but the experimental group showed significantly shorter persistence of red dermographia. Differences for other circulatory measures ap-

proached statistical significance. A special circulatory factor is postulated.

A new factor solution for Halstead's neuropsychological tests. M. A. WENGER and R. B. VOAS, *University of California (Los Angeles)*.

A new factor analysis of Halstead's data was made omitting test 18, one of two Visual Field tests which correlated .809, in the belief that this high correlation had unduly influenced the nature of the four factors reported by Halstead. Five significant orthogonal factors were found. New factor interpretations are suggested in the light of these results.

The electroencephalogram as an index of integrative behavior. JOSEPH C. COLE, *University of Southern California*.

The electroencephalograms of normal subjects were studied in an attempt to determine whether significant relationships could be demonstrated to exist between the cerebral potential and psychological behavior. The probability of a measurable relationship between fluctuations in the alpha rhythm and personality structure or homeostatic balance is indicated.

The nature of memory decrement in electroconvulsive shock. J. C. NARCISO, Jr., *Chico State College*, and PHILIP WORCHEL, *University of Texas*.

The hypothesis suggested is that a temporary suppression of recently formed memory pathways occurs following electroconvulsive shock.

Two matched groups of rats learned a fourteen-unit multiple-T maze. The experimental group was subjected to six massed shocks upon learning. An interval of four days elapsed before re-learning began.

The results showed no significant difference in re-learning measures or general behavior.

A proposed neurophysiological mechanism for certain hysterical symptoms. MARGARET HUBBARD JONES, *University of California (Los Angeles)*.

It is suggested that psychically painful experiences which induce autonomic activity may, like sensory pain, arouse cortical suppressor areas. Activity of a suppressor area may then depress activity in some other area resulting variously in anesthesia, paralysis, amnesia or narcolepsy. The possible effects of individual differences in vigor

of suppressor action, concurrent cortical events and habitual cortical patterns are discussed.

Addition and number checking test performance of men in extreme thermal environments. JOHN LYMAN, *University of California (Los Angeles)*.

Eight pilots were placed in thermal environments of 160°, 200°, and 240° F. and administered addition and number checking tests. Pulse rate, skin and rectal temperatures were measured concurrently. Performance decrements occurred as the subjects approached a physiological limit of heat tolerance and were related to the subjects' statement of an inability to concentrate on the requirements of the task.

The consistency of individual ergographic work patterns, F. NOWELL JONES, *University of California (Los Angeles)* and JULIA DOROTHY CORKILLE, *Seattle Public Schools*.

Ergograms from a Mosso type ergograph were obtained twice, with an interval of five weeks, from 35 college students. There was greater than chance agreement in judged category for first and second curves from the same person, and the relative heights of comparable tenths of first and second curves correlated from .05 to .60.

The accuracy of prediction motion. ROBERT M. GOTTSANKER, *University of California (Santa Barbara College)*.

Subjects were given a tracking task in which they were instructed to continue tracking (predicting target motion) after the target disappeared. A constant rate was maintained with high accuracy. An accelerating pattern was predicted with rates lower than the terminal rate; a decelerating pattern was predicted with rates higher than the terminal rate.

Syllabic rate of original and repeated messages. CHARLES LIGHTFOOT, *University of Southern California*.

Preliminary investigation suggested that syllabic rate of spoken messages partially determines the rate of repeated versions even though the message repeaters are instructed to talk naturally. Further experimentation confirmed the existence of such a relationship and indicated that it would prevail despite changes in the electro-acoustic system used for presenting the messages or changes in the intensity level of presentation.

### 3C: Therapy and Counseling

WALTHER JOEL, *Chairman*

Fifty guests of Resthaven. JOSEPH O. STANTON, *Bureau of Vocational Rehabilitation, California Department of Education*.

A study of fifty mental cases whose care in Resthaven Sanitarium was paid for by the California Bureau of Vocational Rehabilitation shows the economic soundness of early treatment as well as the benefits to the individual patient. Forty-five of these people were restored to useful places in society. The work of the lay counselor in this field is exacting but rewarding.

Study disability from excessive self demand. HARRINGTON V. INGHAM, *University of California (Los Angeles)*.

Some college students who complain of difficulty in studying appear to suffer from unreasonable study aspirations. From clinical observation, the author describes a vicious cycle of excessive demand, self recrimination, failing interest, less attention, decreased learning speed, and increased self recrimination. The students are presumed to disturb their own motivation by failing to get satisfaction in return for effort.

A theory of stuttering as approach-avoidance conflict. JOSEPH SHEEHAN, *University of California (Los Angeles)*.

Stuttering is a resultant of approach-avoidance conflict, of opposed urges to speak and to hold back from speaking. The "holding back" may be due either to learned avoidances or to unconscious motives; the approach-avoidance formulation fits both. A recent experiment is cited in which the author was able to reduce stuttering through the reinforcement of approach responses.

An experimental investigation of the effectiveness, in terms of insight, of reflection of feeling versus interpretation. DAVID GROSSMAN, *VA Birmingham General Hospital*.

Two groups of ten subjects were matched. A therapist recognized explicit feelings with one group and implicit feelings with the other. Two insight tests were administered prior to, following, and six weeks after three individual interviews. No significant differences were found between the two groups following the interviews, but the "implicit"

group made significant gains between pre- and post-therapy scores.

A client-centered approach to vocational counseling.

G. D. BARAHAL, L. M. BRAMMER, and E. L. SHOSTROM, *Stanford University*.

This study compared the use of newly developed client-centered techniques and materials in vocational counseling with materials commonly used in Veterans Administration guidance centers. It was found that with Stanford freshmen the use of the client centered approach resulted in greater client satisfaction with counseling, and more client self-direction.

Group therapy and hospital administration. HENDRIK LINDT and GEORGE LEVENTHAL, *VA Mental Hygiene Clinic, Los Angeles*.

Members of an established therapy group at the neuropsychiatric hospital were encouraged to express their feelings about the hospital in the presence of the hospital administrator, who periodically attended their sessions. Such freedom to complain and criticize without subsequent punishment served as a corrective emotional experience. Through use of the reality content of patients' complaints, group therapy became a tool of hospital administration.

Toward a theoretical foundation for group psychotherapy. GEORGE R. BACH, *Los Angeles*.

The difficulties encountered in attempts to describe and predict the social behavior of individuals in group therapy with the aid of personality structure concepts are described. Preliminary attempts at expanding the theoretical suggestions made by Alder, Lewin and Sullivan in the direction of a conceptual integration of need structure variables, social response data and "group-dynamic" stimulus variables will be reported.

The use of spontaneous drawings in group therapy.

DOROTHY W. BARUCH and HYMAN MILLER, *Beverly Hills*.

This paper describes techniques utilizing patients' own spontaneous paintings therapeutically in a psychoanalytically oriented group. Slides with stenographic protocols of excerpts from group sessions brings out the meanings of the pictures both to the artist and to other members and illustrate how they served projectively in furthering release and gaining insight.

Saturday Afternoon, April 29

4A: Test Evaluation

HUGH M. BELL, *Chairman*

Do the Szondi choices reflect individuality? L. J. BORSTELMANN and W. G. KLOPFER, *University of California (Berkeley)*.

The Szondi rationale assumes that an individual's personality is reflected in choice of pictures because they are invested with personal affective values. However, present profiles show markedly stereotyped selections. Reordering of test pictures on the basis of experimental affective scaling tends to equate affective pull within test sets and thus to reduce the effects of stereotypy upon selections.

Rorschach populars as a function of length of record. GRACE M. THOMPSON, *Santa Barbara County Schools*.

Correlation of populars versus total responses in group Rorschachs of two college samples of 100 and 128 yielded  $r$ 's of .33 and .61. When corrected for attenuation, the latter  $r$  became .84. This finding would suggest that Rorschach populars would have more clinical meaning expressed as a ratio to the total rather than an absolute number as suggested by Beck.

Level of aspiration and rigidity on the Rorschach compared with operationally determined measures. SEYMOUR L. ZELEN, *University of California (Los Angeles)*.

This study attempts to validate the assumptions that the Rorschach yields (1) a measure of level of aspiration and (2) a measure of rigidity-flexibility, against behavioral measures provided by the Rotter Level of Aspiration Board. Critical factors of both techniques were compared, both singly and in patterns. Comparison of patterns yielded higher correlations than did individual signs.

The internal structure of three clinical instruments.

WILLIAM MARSHALL WHEELER, *VA Neuropsychiatric Hospital, Los Angeles*.

One of the methods for studying any psychological test consists of an examination of the interrelationships existing among various parts of the test. Factor analysis can be used for this purpose. The present study utilizes this method to study the Rorschach, the Wechsler-Bellevue, and the Minnesota Multiphasic Personality Inventory.

A factor analysis of the MMPI. GEORGE F. J. LEHNER, WILLIAM MARSHALL WHEELER, and KENNETH B. LITTLE, *University of California (Los Angeles) and VA Neuropsychiatric Hospital, Los Angeles.*

In an effort to interpret the interrelationships among the scales of the MMPI, a factor analysis was made on three matrices, consisting of data from a group of 112 college students, a group of 110 NP patients, and the combined group of 222 subjects.

Results obtained are discussed in terms of the differential diagnostic power of the scales.

Some characteristics of the M-F Score. ROBERT T. ROSS, *Los Angeles-Orange County State College.*

Groups of 223 college men and 147 college women were retested after a two-year interval with the Terman-Miles M-F Test. Changes in scores and reliabilities are reported. Contrasting groups of high- and low-scoring men and women were then selected and administered a battery of standard psychological tests. A comparison of scores for the contrasting groups is presented.

Wechsler Patterns and psychiatric diagnosis: A re-evaluation through a new approach. WILLIAM S. KOGAN, *VA Mental Hygiene Clinic, Portland.*

A direct test is made to determine whether total Wechsler Patterns are useful, applied to individual cases. Amount of agreement in pattern between pairs of individuals is examined for relationship to agreement in diagnosis. Subjects: 50 Neurotics, 50 Schizophrenics; relevant variables matched. Results indicate extreme unlikelihood that total Wechsler Patterns will ever be useful as diagnostic tools in individual cases.

The prognostic value of significantly different Q and L scores of the A.C.E. psychological examination at the college level. FREDERICK M. MARTIN, *San Jose State College.*

To evaluate the differential predictive effectiveness of significantly different Q and L sub-scores on the A.C.E. Psychological Examination for "quantitative" and "verbal" academic subjects, 957 students' sub-scores were correlated and the regression equations determined. Sub-scores farthest from the regression lines were then compared for their differential predictive power. Attrition rates and individual characteristics accompanying large sub-score differences were also examined.

Internal consistency and external validation in the analysis of items measuring professional information. DAVID G. RYANS, *University of California (Los Angeles).*

Discrimination indexes for the items of a test measuring professional information were computed (1) by the usual internal consistency method, and (2) through use of an external criterion based upon judgments of job behavior of the testees. Although the indexes obtained by the differing methods were positively correlated, those relating to the external criterion were, as expected, of a lower order than the corresponding internally derived indexes.

#### 4B: Personality and Social II

HILDING B. CARLSON, *Chairman*

Toward a more productive concept of mental health.

DOROTHY CLIFTON CONRAD, *VA Mental Hygiene Clinic, San Francisco.*

A conceptualization of mental health which provides for the inclusion of *positive health*, as well as the customary presence or absence of pathology, in individual diagnosis is presented. The *pattern of living* in its entirety must be studied and described for a meaningful and productive diagnosis. Such an expanded orientation has important implications for psychotherapy, public health and research.

A personality study of spastic colitis in relation to peptic ulcer and bronchial asthma. GEORGENE H. SEWARD, PHILIP GOODWIN, and SIDNEY PRINCE, *University of Southern California and the VA*, and LESTER M. MORRISON, *Cedars of Lebanon Hospital, Los Angeles.*

A series of 21 spastic colitis cases were compared on the Rorschach and Rosenzweig tests with similar groups of peptic ulcer and bronchial asthma patients.

The results suggest that the colitis patient is an immature person, incapable of relating to people adequately. Although less immature than the ulcer or asthma cases he shares with them a deep-seated character defect.

An experimental investigation of the "reality-strata" of certain objectively defined groups of individuals by use of the level of aspiration technique. RUSSELL N. CASSEL, *San Diego State College.*

The study compared the results from the Rotter Aspiration Board on 176 individuals from six ex-

perimental groups with 50 individuals from a randomly selected control group. The experimental groups ranged from homicides to vocational under-aspirers, and were defined as atypical but not abnormal. Statistically significant differences were obtained between each atypical group and the control group.

A clinical study of interpersonal relations among hospitalized psychotic patients: Methodology and sources of information. STEPHEN RAUCH and MARY ALYCE DARBY, *University of California (Berkeley) and V.A.*

Participant observation by two clinical psychologists is the principal method utilized to study interpersonal relations in a locked ward group of 92 psychotic patients. A unique methodological treatment of behavior observations, plus information from other hospital sources, yields a meaningful description of the ward social structure, and permits the study of the relationships between interpersonal behavior and psychiatric condition.

A dynamic interpretation of transvestism. VIRGINIA JOHNSON, *Los Angeles State College.*

Male transvestism has been categorized as one of the psychosexual aberrations usually connected with homosexuality. It is suggested that the term *transvestism* be reserved for a behavior pattern characterized primarily by obsessive or compulsive needs to dress in female clothing to implement the fantasy of being a woman psychically in spite of normal male physique and heterosexual libido cathexis.

#### 4C: Psychodiagnostics II

OSCAR J. KAPLAN, *Chairman*

Height of figure as a diagnostic variable in the draw-a-person test. E. K. GUNDERSON and GEORGE F. J. LEHNER, *University of California (Los Angeles).*

Figure height in the Draw-A-Person test and its relationship to various factors is studied by analysis of variance. The results of this approach and the use of this technique in clinical research are considered.

A validation study of the Projective-Motor (PM) Test using the blind matching technique. MAURICE RAPKIN, *Los Angeles Psychological Service Center.*

This is part of a larger validation study of this

new graphic-motor psychodiagnostic technique (*Amer. Psychol.*, Aug. '48, p. 341). Personality descriptions (36 outpatients undergoing psychotherapy) were derived from the PM. These were matched with therapists' judgments. The personality descriptions followed a standard outline covering personality structure and content. The validity index was 84%.

A preliminary report on the Year-by-Year Test. DONALD B. PETERS, *University of California (Los Angeles).*

The Year-by-Year Test is a recently developed self-report and projective technique which elicits the subject's appraisal of his feelings about himself and his personal experiences during his lifetime. Its development follows from interest in personal documents, and autobiographical and case history materials.

Empirically, this technique shows promise as a useful clinical device suitable for individual or group administration.

Thematic test analysis. EDWIN S. SHNEIDMAN, *Neuropsychiatric Hospital, Los Angeles.*

A preliminary report on the independent interpretations of the same set of TAT and MAPS test protocols by fifteen psychologists, all of whom have published techniques for interpreting the TAT. The report will include comments about generic types of analysis, agreements and disagreements among interpretations, comparisons with case history and psychotherapy data, and implications for test analysis and future research.

#### Special Meetings

Held Friday and Saturday Afternoons

- A. Meeting of Student Affiliates of the A.P.A., members of Psi Chi and other students being invited to attend. Lloyd G. Humphreys, presiding.
- B. Annual Business Meeting of the California State Psychological Association. Warner Brown, presiding.
- C. Meeting of Psychology Departments of California State Colleges. Hugh M. Bell, presiding.
- D. Meeting of members of the Division of Abnormal and Clinical Psychology of the A.P.A. Ruth S. Tolman, Presiding.

*Received June 12, 1950*

# PROCEEDINGS OF THE TWENTY-SECOND ANNUAL MEETING OF THE MIDWESTERN PSYCHOLOGICAL ASSOCIATION

DAVID A. GRANT, *Secretary-treasurer*

*University of Wisconsin*

THE Midwestern Psychological Association held its twenty-second annual meeting at Wayne University in Detroit on May 5-6, 1950. The program was arranged by a committee consisting of E. H. Porter, Jr. (chairman), Orlo L. Crissey, and Judson S. Brown. Local arrangements were handled by a committee consisting of C. G. Browne (chairman), Roger M. Bellows, Doris Cline, F. Morse Cooke, Arthur E. Johnson, Wilson McTeer, Edward T. Raney, James C. Reed, John C. Sullivan, and Gertha Williams. Registrations totalled 1094.

The program consisted of 202 papers which were scheduled in 22 sessions. The greatest emphasis was on learning, clinical psychology, and industrial and applied psychology. In addition there were five symposia: latent learning, stuttering, projective tests, industrial psychology, and psychotherapy. Regional meetings of the Division of Clinical and Abnormal Psychology, APA; Student Affiliates, APA; and the S.P.S.S.I. Committee on Teaching of Social Psychology were held in connection with the MPA meetings.

The presidential address was given by Claude E. Buxton, under the title, "Teaching: Have your cake and eat it too?". The address was followed by a social hour at the Detroit Art Institute. At the annual business meeting it was decided to continue to hold two-day meetings, and the program committee was instructed to limit the number of papers on the program to 160, maintaining the general proportionality of fields represented in the submitted abstracts. Emphasis was to continue to be on completed major research, and the policy of encouraging graduate students was to be retained. The membership was to be polled for the guidance of the Council in recommending policy for the publication of future programs.

The newly elected officers were: William A. Hunt, President; Paul E. Meehl, Executive Coun-

cil (three years); and Delos D. Wickens, Executive Council (one year). Julian Rotter was appointed to the Program Committee, and Orlo L. Crissey was selected to serve as chairman of the Program Committee for the 1951 meeting.

The next annual meeting of the Association will be at the Drake Hotel in Chicago, April 27-28, 1951.

The following 97 Fellows and Associates of the APA availed themselves of the standing invitation to join the MPA by submitting the \$1.50 annual dues:

Ammons, Carol H.	Greenberg, Ruth Schieber
Andrew, Gwen	Greenspoon, Joel
Bahrick, Harry P.	Grummon, Donald L.
Baker, L. M.	Hayes, Keith
Barker, Roger G.	Hobart, Helen W.
Barnett, Irving	Hoffman, M. L.
Bass, Bernard M.	Holtzman, Wayne H.
Bonner, Hubert	Hoover, Gerald L.
Bruce, Robert W.	Hovorka, Edward J.
Canfield, A. A.	Hurder, William P.
Collins, Nancy T.	Isaacs, Kenneth S.
Comrey, Andrew L.	Jay, Otis
Cooke, F. Morse	Kane, Mary Grace
Coombs, Clyde H.	Kates, Solis
Dahlstrom, Leona E.	Kell, Bill L.
Dahlstrom, W. Grant	Kendall, William E.
Drake, Lewis E.	Kenshalo, Daniel R.
Dulsky, Stanley G.	Kephart, N. C.
Dykman, Ross A.	King, Joseph E.
Ebel, Robert L.	Klumb, Shirley
Elliott, Donald N.	Kobler, Frank J.
Ellis, Douglas S.	Lachman, Sheldon J.
Eninger, Max W.	Lassner, Rudolf
Eson, Morris E.	Lawshe, C. H.
Friedman, Merton H.	London, Ivan D.
Fuller, Paul R.	McCully, Robert S.
Gee, Helen Hofer	Malmo, Robert B.
Gilchrist, Jack C.	Marks, Melvin R.
Gondree, Howard E.	Maussner, Howard
Gordon, Thomas	Miles, Dwight
Grable, R. Harold	Miller, Betty Picket
Graham, Thomas F., Sr.	Müller, Mungo
Graver, Harold A.	Mummery, Dorothy V.
Greenberg, Paul D.	Mussen, Paul H.

Nesbitt, Margaret  
 Newman, Slater C.  
 Noller, Theresa J.  
 O'Brien, Cyril C.  
 Paine, Harold E.  
 Palmer, James O.  
 Pascal, Gerald R.  
 Pratt, Carolyn  
 Rasmussen, Dorothy E.  
 Riesen, Austin H.  
 Riley, Donald Alan  
 Rosen, Ephraim  
 Rosenbaum, Gerald  
 Seeman, Julius  
 Shaw, Franklin J.

Shelley, Harry P.  
 Simkin, James S.  
 Smith, Walter J.  
 Sorkovitz, Herman  
 Sprow, Allen J.  
 Stone, C. Harold  
 Streich, Eugene  
 Taylor, Harold C.  
 Thompson, W. R.  
 Towne, Mary R.  
 Torrance, Paul  
 Wenrick, J. E.  
 Wittenborn, J. R.  
 Wolin, Burton R.

Gregg, Lee W.  
 Heyman, Marshall N.  
 Hines, Ruth Baker  
 Homme, Lloyd E.  
 Howard, Alvin R.  
 Janetos, Peter  
 Kempe, James E.  
 Kennedy, Vera E.  
 Klopp, Howard C.  
 Kluge, William, Jr.  
 Knopf, Irwin Jay  
 Kramer, Richard A.  
 Krout, Johanna  
 Lesiw, Walter  
 Lichtenberg, Philip  
 Ludeman, John  
 Maize, Ray C.  
 Mason, Charles  
 Mason, Joseph M.  
 Matarazzo, Joseph  
 McGinley, Andrew D., Jr.  
 Miles, Mrs. Minnie C.  
 Miller, Harry J.  
 Morin, Robert  
 Mueller, Wilbert J.  
 Murray, David  
 Myers, Marvin Scott  
 Nelson, William H.  
 Niven, Jarold

O'Brien, Robert B.  
 Olson, Gordon W.  
 Pierce, Gwendolyn  
 Plumb, Galen  
 Ray, Thomas S.  
 Reed, James  
 Ribback, Alan  
 Robinson, Howard B.  
 Rohde, Kermit  
 Ross, Bruce  
 Schipper, Lowell  
 Schmidt, Robert E.  
 Shephard, Alfred H.  
 Sidwell, Richard T.  
 Silverman, Harold  
 Smith, William R., Jr.  
 Sperry, Roger W.  
 Stoughton, Gwendolen  
 Swanson, Robert  
 Thackray, Shirley  
 Thurston, John  
 Twedt, Dik Warren  
 Van Spanckeren, Warner J.  
 Waite, Richard R.  
 Warren, John Michael  
 Wellman, Frank E.  
 Williams, Carl  
 Woodruff, Arnold B.

The following 73 applicants were elected to membership:

Adams, Jack A.  
 Anderson, William F., Jr.  
 Archer, E. James  
 Bell, Graham  
 Baas, Malcolm L.  
 Bishop, Conrad C.  
 Bradt, Kenneth H.  
 Carey, James F., Jr.  
 Chappell, Tolan L.

Crandall, Vaughn J.  
 Creager, John A.  
 Dee, Russell E.  
 Driscoll, Patrick J.  
 Eichorn, Dorothy  
 Engram, William C.  
 Fay, John C., Jr.  
 Gellerman, Saul  
 Goodenough, David

## PROGRAM

### Audition

GARTH J. THOMAS, *University of Chicago*,  
 Chairman

Document 2837; Microfilm, \$0.50;  
 Photocopy, \$1.80<sup>1</sup>

G. PETER ARNOTT, *University of Chicago*. Localization of sound in space.

ROBERT A. BUTLER and WILLIAM D. NEFF, *University of Chicago*. Role of the auditory cortex in the discrimination of changes in frequency.

GWENDOLEN, S. STOUGHTON and WILLIAM D. NEFF, *University of Chicago*. Function of the auditory cortex: the effects of one-stage vs. two-state ablation.

JAMES P. EGAN and HAROLD W. HAKE, *University of Wisconsin*. On the excitation pattern of a simple auditory stimulus.

<sup>1</sup> An abstract of each paper has been filed with the American Documentation Institute, Science Service Building, 1719 N Street N. W., Washington 6, D. C. Microfilm or 6 x 8 in. photocopies of groups of related papers may be ordered by Document number as indicated.

DONALD R. MEYER, and JAMES P. EGAN, *University of Wisconsin*. Pitch changes as a function of the pattern of excitation produced by a band of noise.

WILLIAM H. LICHTE and R. F. GRAY, *University of Missouri*. The pitch of complex tones.

### Vision

WILLIAM S. VERPLANCK, *Indiana University*,  
 Chairman

Document 2837, cont.

AUSTIN H. RIESEN, JOSEPHINE SEMMES BLUM, and KENNETH T. BROWN, *University of Chicago*. Visual losses in primates after periods of light deprivation.

F. A. MOTE, *University of Wisconsin*. The effect of varying the intensity and duration of pre-adapting light upon the course of foveal dark adaptation.

HAROLD W. HAKE and ARTHUR J. RIOPELLE, *University of Wisconsin*. Area-intensity relations in the peripheral retina with annular stimuli.

BERNARD G. ROSENTHAL and HOWARD S. MELE,  
*University of Chicago.* An experimental study  
of the validity of hypnotically hallucinated colors.

#### Learning I

G. RAYMOND STONE, *University of Oklahoma,*  
Chairman

Document 2838; Microfilm, \$0.50;  
Photocopy, \$2.10

FRANCIS H. PALMER, *Allegheny College.* Comparative performance of cats and rats in the double-alternation problem of the temporal maze.

CHARLES C. PERKINS, JR., JOHN R. TILTON and ANTHONY J. CACIOPPO, *Kent State University.* An experimental demonstration of "regression" in the rat in the absence of a noxious stimulus.

MELVIN H. MARX, *University of Missouri.* Terminal reinforcement of the food-hoarding habit in the rat.

LLOYD, E. HOMME, *Indiana University.* A positive relationship between work-output and learning rate of an instrumental response.

ROGER T. DAVIS, *University of Wisconsin.* Pattern discrimination by normal monkeys with varying effort conditions.

M. U. ENINGER, *Carnegie Institute of Technology.* The rate of learning a tone-no tone discrimination as a function of the discriminanda duration at the time of the choicepoint response.

ROBERT S. FRENCH, *University of Wisconsin.* Human discrimination learning with uni-dimensional and multi-dimensional stimuli.

NORMAN GUTTMAN and WILLIAM K. ESTES, *Indiana University.* Indirect extinction of the bar pressing response.

ABRAM AMSEL, *Newcomb College.* An experimental analysis of the role of emotionally-derived needs in motivational complexes.

LOWELL M. SCHIPPER and DAVID A. GRANT, *University of Wisconsin.* Relationships between acquisition and extinction measures in eyelid conditioning.

MELVIN R. MARKS, *Tulane University.* Problem-solving as a function of the problem-situation.

KEITH J. HAYES and CATHY HAYES, *Yerkes Laboratories of Primate Biology, Orange Park, Florida.* Vocalization and speech in chimpanzees (Sound film).

#### Symposium on Stuttering

WENDELL JOHNSON, *State University of Iowa,*  
Chairman

#### Social I

CHARLES C. GIBBONS, *Upjohn Institute for Community Research,* Chairman

Document 2839; Microfilm, \$0.50;  
Photocopy, \$0.80

ROSS STAGNER, *University of Illinois.* Attitude toward authority: a crucial problem in social psychology.

SAUL GELLERMAN, *Lincoln State School.* The relation between social attitudes and projected themes of frustration by parents.

DANIEL J. LEVINSON and PHILIP LICHTENBERG, *Western Reserve University.* Authoritarian personality and religious ideology: I. The Religious Conventionalism Scale.

PHILIP LICHTENBERG and DANIEL J. LEVINSON, *Western Reserve University.* Authoritarian personality and religious ideology: II. An analysis of standardized personal documents of high and low scorers on the Religious Conventionalism Scale.

#### Clinical Testing I

HEDDA BOLGAR, *VA Mental Hygiene Clinic, Chicago,* Chairman

Document 2840; Microfilm, \$0.50;  
Photocopy, \$2.00

IRVING BARNETT, *State University of Iowa.* The influence of color and shading upon the other Rorschach scoring categories.

HOWARD L. SIPPLE and WILLIAM A. ALEXANDER, *Winter VA Hospital, Topeka.* Rorschach's experience balance and sense hallucinated.

MILDRED B. MITCHELL, *VA Mental Hygiene Clinic, Ft. Snelling.* Preference for Rorschach cards.

WAYNE H. HOLTZMAN, *University of Texas.* Validation studies of the Rorschach test: I. Shyness and gregariousness in the normal superior adult.

HERMAN B. MOLISH, *Michael Reese Hospital, Chicago;* ELLEN ELSTE MOLISH, *Chicago, Illinois;* and CAROLINE BEDELL THOMAS, *Johns Hopkins University School of Medicine.* A Rorschach study of a group of medical students.

MARGUERITE R. HERTZ, *Western Reserve University*. The use of the Rorschach method for the evaluation of psychotherapy.

DOROTHY TERRY, *University of Wisconsin*. A study of level of projection in TAT protocols of college women.

EDITH A. WEISSKOPF and GEORGE P. DUNLEVY, *Purdue University*. An experimental study of the effect upon projection of physical similarity between subject and hero in the TAT.

#### The Clinician and Diagnosis

NORMAN CAMERON, *University of Wisconsin*, Chairman

Document 2840, *cont.*

E. R. SINNETT and A. EGLASH, *University of Michigan*. The examiner-subject relationships as a variable in the Draw-A-Person Test.

KENNETH, S. ISAACS, FRED E. FIEDLER, and DONALD W. FISKE, *University of Chicago*. Some factors involved in the understanding of patients by clinicians.

WILLIAM F. SOSKIN, *University of Chicago*. Postdicting human behavior—preliminary report.

DONALD W. FISKE, FRED E. FIEDLER, and KENNETH S. ISAACS, *University of Chicago*. Rigidity in clinical judgments.

#### Industrial I

ANGUS CAMPBELL, *University of Michigan*, Chairman

Document 2841; Microfilm, \$0.50;  
Photocopy, \$1.40

H. MELTZER, *Psychological Service Center, St. Louis, Missouri*. Wages and industrial morale.

JOHN R. TOPAL and WILLARD A. KERR, *Illinois Institute of Technology*. Factorial analysis of job satisfaction.

R. C. FRANKENBERG, FREDERICK W. TUKOVITS and WILLARD A. KERR, *Illinois Institute of Technology*. Motivational and morale values of situational stimuli in work life.

ROBERT J. CRAMER and WILLARD A. KERR, *Illinois Institute of Technology*. Age group and attrition morale phenomena in industrially employed males.

JAMES J. SULLIVAN, WILLARD A. KERR, *Illinois Institute of Technology*, and GEORGE J. KOPPEL-

MEIER, *Croname, Inc., Chicago*. Absenteeism, turnover, and morale in a metals fabrication factory.

F. RAYMOND ZINTZ, *Otarion, Inc., Chicago*, and WILLARD A. KERR, *Illinois Institute of Technology*. Hearing loss and worker morale.

JOHN W. GRIFFITH, WILLARD A. KERR, THOMAS B. MAYO, JR., *Illinois Institute of Technology*, and JOHN R. TOPAL, *Belden Manufacturing Company*. Subjective fatigue and readiness for work during the eight-hour shift.

BERTRAM GOTTLIEB and WILLARD A. KERR, *Illinois Institute of Technology*. An experiment in industrial harmony.

CHESTER A. EVANS, *General Motors Corporation*. The translation of survey findings in the clarification of personnel policies.

CARL H. WEDELL, *University of Wisconsin*. The Questionnaire versus the interview in the determination of employee attitudes. (Read by K. U. Smith.)

#### The Program of the Survey Research Center

ANGUS CAMPBELL, *University of Michigan*

Learning II

IRVING J. SALTMAN, *Indiana University*, Chairman

Document 2843; Microfilm, \$0.50;  
Photocopy \$3.80

STANLEY C. RATNER and CHARLES C. PERKINS, JR., *Kent State University*. Acquired thirst drive in rats.

RICHARD A. BEHAN and M. RAY DENNY, *Michigan State College*. An investigation of some factors relevant to the development of a secondary hunger drive.

EDWARD L. WALKER and JOHN A. MODRICK, *University of Michigan*. The effect of irrelevant secondary drives and rewards on extinction.

HAROLD W. COPPOCK, *Indiana University*. Secondary reinforcing effect of a visual stimulus as a function of its temporal relation to shock termination.

ROBERT HENDERSON, BRADLEY REYNOLDS, and MELVIN MARX, *University of Missouri*. Resistance to extinction as a function of drive-reward interaction during acquisition of a habit.

M. RAY DENNY and MORTON D. DUNHAM, *Michigan State College*. The effect of differential non-

reinforcement of the incorrect response on the learning of the correct response in simple T-maze learning.

WALTER ISAAC and DELOS D. WICKENS, *Ohio State University*. The interaction between drive strength and amount of reward in the performance of the white rat.

CARL D. WILLIAMS, *University of Chicago*. The effect of drive on habit strength.

CLARENCE LEUBA and RALPH DUNLAP, *Antioch College*. Conditioning imagery.

W. J. BROGDEN, *University of Wisconsin*. Sensory conditioning measured by the facilitation of auditory acuity.

DELOS D. WICKENS, *Ohio State University*. The development of habit strength to the individual units in a compound stimulus.

MARTIN R. BARON, *Kent State University*. The effect on eyelid conditioning of a speech variable in stutterers and non-stutterers.

### Learning III

BRADLEY REYNOLDS, *University of Missouri*,  
Chairman

Document 2843, cont.

CAROL H. AMMONS and ROBERT B. AMMONS, *University of Louisville*. Mirror drawing performance with pacing and interpolated rest.

ROBERT B. AMMONS and CAROL H. AMMONS, *University of Louisville*. Warming up in rotary pursuit.

JACK A. ADAMS, *State University of Iowa*. The effect of distribution of practice on warmup decrements in pursuit rotor performance.

JOHN WEAVER and M. RAY DENNY, *Michigan State College*. An investigation of the comparative effect of massed spaced pre-rest practice upon both massed and spaced post-rest performance on the pursuit rotor task.

JAMES L. HEDLUND, *State University of Iowa*. New attempts to demonstrate retroaction in the performance of rotary pursuit tasks.

A. BOND WOODRUFF and ARTHUR W. MELTON, *Ohio State University*. The effects of interpolated rest pauses in the learning of the SAM Single Dimension Pursuitmeter.

ALFRED H. SHEPHERD, *State University of Iowa*. Prior learning as a factor in shaping performance curves.

WALTER SPIETH, *State University of Iowa*. The effects of alternating practice on the performance of antagonistic motor tasks.

ARNOLD H. BUSS, *Indiana University*. Concept formation as a function of reinforcement and stimulus generalization.

E. J. HOVORKA, *Indiana University*. An application of the operant conditioning technique to a study of stimulus generalization with adult human subjects.

H. B. ROBINSON and D. D. WICKENS, *Ohio State University*. Response generalization as a function of ease of movement.

### Social II

BERNARD G. ROSENTHAL, *University of Chicago*,  
Chairman

Document 2844; Microfilm, \$0.50;  
Photocopy, \$1.40

A. R. LAUER, T. E. HANNUM, RAYMOND J. AGAN, and DAVID H. SOULE, *Iowa State College*. An experimental study of the effects of Aufgabe on scores obtained from certain attitude scales and inventories designed to measure driving attitudes.

ARTHUR J. DRUCKER and HERMAN H. REMMERS, *Purdue University*. The citizenship attitudes of graduated seniors at Purdue University, U. S. college graduates and high school pupils.

H. H. REMMERS and A. J. DRUCKER, *Purdue University*. Teen-agers' attitudes toward problems of child management.

MARTIN L. HOFFMAN, *Purdue University*. Some personality characteristics associated with perceptual distortion caused by conformity.

MILTON ROKEACH, *Michigan State College*. Prejudice, concreteness of thinking and reification of thinking.

EMANUEL K. BELLER, *Indiana University*. Two components of prejudice.

GLORIA LAUER GRACE, *Urbana, Illinois*, and HARRY A. GRACE, *University of Illinois*. The relationship between verbal and behavioral measures of values.

HARRY A. GRACE, *University of Illinois*. The geographic preference inventory: world cultures and autistic thinking.

WESLEY O. ALVEN, *University of Akron*. Attitudinal differences between Protestant fundamentalists and humanists as revealed by the incomplete sentence method.

### Guidance I

FRANCIS P. ROBINSON, *Ohio State University*,  
Chairman

Document 2845; Microfilm, \$0.50;  
Photocopy, \$0.80

FRANCIS H. DILLON, *State Teachers College, Moorhead, Minnesota*. The relationship between basic motivation and choice of teaching as a profession.

WILLIAM F. ANDERSON, JR., and RALPH C. BEDELL, *University of Nebraska*. Predicting success in nurses training.

WILLIAM H. NELSON and RALPH C. BEDELL, *University of Nebraska*. Opinions of teachers on the use of occupational information in schools.

RALPH C. BEDELL, *University of Nebraska*. The influence of occupational films and special occupational lectures on performance on the Kuder Preference Record.

### Clinical Testing II

JULIAN ROTTER, *Ohio State University*, Chairman

Document 2842; Microfilm, \$0.50;  
Photocopy, \$4.20

WILLIAM A. HUNT, *Northwestern University*, and CECIL L. WITTSON, *Central Islip State Hospital, New York*. The validity of neuropsychiatric screening.

P. L. MELLENBRUCH, *University of Kentucky*. How reliable is a personality inventory?

E. LOWELL KELLY and WALTER A. LUSZKI, *University of Michigan*. Study concerning Guilford-Martin variables and ratings from a group assessment program.

RITA WERTHEIMER and FRED MCKINNEY, *University of Missouri*. A comparison of unselected students and students with emotional problems in the use of a case history blank.

G. R. PASCAL and J. B. ZEAMAN, *Western Psychiatric Institute and Clinic, University of Pittsburgh*. Simple methods for the objective determination of some effects of electro-convulsive therapy on the individual patient.

PAUL R. FULLER, D. G. ELLSON, and ROBERT URMSTON, *Indiana University*. The effect of glutamic acid on test scores.

JOSEPH D. MATARAZZO, *Northwestern University*. A study of the diagnostic possibilities of the CVX Scale with a group of organic cases.

GALEN R. PLUMB, *University of Nebraska*. Scoring difficulty of certain responses to the comprehension sub-test of the Wechsler-Bellevue Scale Form I.

ELIZABETH G. FRENCH and WILLIAM A. HUNT, *Northwestern University*. Relationship of "scatter" in test performance to intelligence level.

MELVIN PERLMAN, *University of Chicago*. Social class membership and test-taking attitude.

WINIFRED K. MAGDSICK, AMY DUDLEY, and BETTY JANE CLAY, *Washington University*. An evaluation of Grace Arthur's Stencil Design Test at the high school and college level.

MAURICE H. KROUT, *Chicago Psychological Institute*. An anxiety reaction test.

### Personality

MARY ELIZABETH GRIER-JACQUES, *VA Hospital, Hines, Illinois*, Chairman

Document 2842, cont.

JAMES G. MILLER, *University of Chicago*. Contemplations on the dimensions of personality.

MAXINE T. WOLFENSTEIN, *Western Reserve University*. A developmental study of children's fantasies about moral problems: conceptions of "badness."

LOUIS L. MCQUITTY, *University of Illinois*. A measure of personality integration in relation to the concept of self.

DONALD H. DIETRICH and GWENDOLYN M. PIERCE, *University of Oklahoma*. An empirical approach to an understanding of the bases of maladjustment.

STANLEY M. FRIEDMAN, *Western Reserve University*. An empirical study of the castration complex.

SOLIS L. KATES, *Michigan State College*. Frustration and gratification as factors in behavior.

CALVIN S. HALL, *Western Reserve University*. A theory of symbolism in dreams.

### Psychotherapy

A. THOMAS GORDON, *University of Chicago*, Chairman

Document 2842, cont.

WILLIS H. McCANN, *University of Kansas City*. Round-table psychotherapy.

JAMES O. PALMER, *Washington University Medical School*. Group discussion as a method of patient orientation in a neuropsychiatric hospital.

FRED E. FIEDLER, *University of Chicago*. The therapeutic relationship as an index of the therapist's skill.

W. B. LEMMON and HERMAN SORKOVITZ, *University of Oklahoma*. A study of counselor behavior in the counseling relationship: I. Methodology.

IVAN N. MENSCH and ROBERT E. WATSON, *Washington University Medical School*. Psychiatric opinion on personality factors in psychotherapy.

#### Symposium on Industrial Psychology

C. H. LAWSHE, *Purdue University*, Chairman

#### Symposium on Projective Techniques

MAX HUTT, *University of Michigan*, Chairman

#### Symposium on Latent Learning

ARTHUR W. MELTON, *U.S.A.F.*, Chairman

KENNETH McCORQUODALE and PAUL E. MEEHL, *University of Minnesota*. On the elimination of cul-entries without obvious reinforcement.

ROBERT H. DAVIS and M. RAY DENNY, *Michigan State College*. A test of latent learning for a non-goal significance.

EDWARD L. WALKER, *University of Michigan*. The demonstration of learning acquired under a strong irrelevant drive previously masked by a primarily reinforced response.

SHINKURO IWAHARA and MELVIN H. MARX, *University of Missouri*. Cognitive transfer in discrimination learning.

Discussants: G. ROBERT GRICE, *University of Illinois*, and WILLIAM K. ESTES, *Indiana University*.

#### Physiological I

JOHN R. KNOTT, *State University of Iowa*, Chairman

Document 2847; Microfilm, \$0.50;  
Photocopy, \$2.50

HARRY W. BRAUN, J. F. PIERCE and R. A. PATTON, *University of Pittsburgh*. Learning ability of rats given convulsive and sub-convulsive electric shocks in infancy.

KEITH J. HAYES, *Yerkes Laboratories of Primate Biology, Orange Park, Florida*. Comparative effects of convulsive shock and anoxia on the maze performance of rats.

GILBERT W. MEIER and MARION E. BUNCH, *Washington University*. The effect of natal anoxia on the learning ability of maturity.

WILLIAM PAUL HURDER, *Louisiana State University*. Quantification of effects on anoxia on learning ability of albino rats.

D. B. LINDSLEY, L. H. SCHREINER, W. B. KNOWLES and H. W. MAGOUN, *Northwestern University*. Effect of brain stem lesions on behavior and the electroencephalogram in cats.

J. M. WARREN and H. F. HARLOW, *University of Wisconsin*. Discrimination learning by normal and brain operated monkeys.

A. J. RIOPELLE, H. F. HARLOW, P. H. SETTLAGE and H. W. ADES, *University of Wisconsin*. A comparison of operated and normal monkeys on five visual discrimination problems.

HARRY F. HARLOW and DONALD R. MEYER, *University of Wisconsin*. A survey of delayed response performance by monkeys with severe brain damage.

Ross A. DYKMAN, *Illinois Institute of Technology*. Sustained conditioning in spinal animals.

HOWARD ZIMMERMAN, ROSS A. DYKMAN and PHIL S. SHURRAGER, *Illinois Institute of Technology*. The latency of the spinal conditioned response.

OTTO J. KROH, ROSS A. DYKMAN and PHIL S. SHURRAGER, *Illinois Institute of Technology*. Tail brush conditioning in the spinal cat.

P. S. SHURRAGER and H. C. SHURRAGER, *Illinois Institute of Technology*. Localization of sound conditioning in the cortex.

#### Learning IV

I. E. FARBER, *State University of Iowa*, Chairman

Document 2848; Microfilm, \$0.50;  
Photocopy, \$2.50

NORMAN WALTER and G. RAYMOND STONE, *University of Oklahoma*. The effect of negative incentives in serial learning. VI. Response repetition as function of an isolated electric shock punishment.

ROBERT A. BOTTERBERG and MELVIN H. MARX, *University of Missouri*. Preferential recall as a

function of completion or interruption of problem tasks.

CARL P. DUNCAN, *Northwestern University*. The action of various after-effects of response repetition.

JOEL GREENSPOON, *Indiana University*. The effect of a verbal stimulus on the frequency of verbal responses.

IRVING J. SALTZMAN, *Indiana University*. Delay of reinforcement and the nature of the learning task.

#### Measurement and Statistics

CLYDE H. COOMBS, *University of Michigan*, Chairman

Document 2849; Microfilm, \$0.50;  
Photocopy, \$4.30

EDWARD B. GREENE, *Wayne University*. The nature of dispersions of ratings.

LEE W. GREGG, *University of Wisconsin*. Fractionation of temporal intervals.

ANDREW L. COMREY, *University of Illinois*. A proposed method for absolute ratio scaling.

C. J. BURKE, *Indiana University*. The effect of postponed decisions on statistical tests.

LEE J. CRONBACH and DORA E. DAMRIN, *University of Illinois*. How to determine and interpret test homogeneity.

ROBERT GLASER, *University of Kentucky*. Some properties of the pattern of inconsistent responses on certain kinds of psychological tests.

PHILIP H. DUBoIS, *Washington University*. Some principles of digitizing with punched card equipment.

#### Educational

ERNEST A. HAGGARD, *University of Chicago*, Chairman

Document 2849, cont.

HARRY J. MILLER and RALPH C. BEDELL, *University of Nebraska*. A rating scale for analyzing motion pictures of football.

THOMAS S. RAY and DONALD H. DIETRICH, *University of Oklahoma*. A student-centered approach to teaching a large class in "client-centered" psychotherapy.

SLATER E. NEWMAN, KENNETH R. BRADT, GRAHAM B. BELL and CARL P. DUNCAN, *Northwestern*

*University*. A simple demonstration of experimental method.

KENNETH H. BRADT, GRAHAM B. BELL, SLATER E. NEWMAN and CARL P. DUNCAN, *Northwestern University*. Study characteristics of general psychology students.

EARLE W. EMME and CHESTER ZEBELL, *Bradley University*. Content analysis of twenty-three textbooks on adjustment and mental hygiene.

HENRY P. SMITH, *University of Kansas*. A comparison of two types of reading programs designed for college students.

N. L. GAGE and GEORGE SUCI, *University of Illinois*. Social perception and teacher-pupil relationships.

#### Guidance II

WILLIAM M. GILBERT, *University of Illinois*, Chairman

Document 2849, cont.

PETER JANETOS and HARRY J. MILLER, *University of Nebraska*. A program of guidance and counseling for athletes.

CLAUDE M. DILLINGER, *Illinois State Normal University*. The mental health of teachers college freshmen.

WILBERT J. MUELLER, *Education Service Institute, Salina, Kansas*. The Cowan adolescent adjustment analyzer used as an instrument for the evaluation of academic functional efficiency.

ALMA LONG, *Purdue University*. Some characteristics of adolescent interpretations of illustrations of emotionally-toned situations.

JOHN W. GUSTAD, *Vanderbilt University*. A comparison between the Miller Analogies Test and the Graduate Record Examination as predictors of success in graduate training.

WILLIAM C. KRATHWOHL, *Illinois Institute of Technology*. Relative contributions of vocabulary and indexes of industriousness for English to achievement in English.

#### Clinical Testing III

ROBERT I. WATSON, *Washington University, St. Louis*, Chairman

Document 2846; Microfilm, \$0.50;  
Photocopy, \$3.10

FORREST B. TYLER and BOYD McCANDLESS, *Ohio State University*. An investigation of the self-

characterization technique as a projective method for the study of personality.

**WILSON H. GUERTIN, Michigan State College.** A consideration of factor loadings on the Szondi Test.

**HAROLD E. PAYNE, Kent State University.** Association of measurable changes in Szondi Test profiles with measurable factors in behavior of psychotics.

**M. A. BROWN, P. B. ERNEST, and L. J. HASSOL, Mendota State Hospital, Madison.** Multiphasic patterns of "successes" and "failures" in Alcoholics Anonymous.

**IONA C. HAMLETT and T. L. ENGLE, Fort Wayne Center of Indiana University and Fort Wayne State School.** A mental health analysis of mentally deficient adult furlough patients.

#### Symposium on Psychotherapy

**WILLIAM SOSKIN, University of Chicago,** Chairman

#### Learning V

**ARTHUR L. IRION, University of Illinois,** Chairman

Document 2848, cont.

**ALAN RIBBACK and B. J. UNDERWOOD, Northwestern University.** An empirical explanation of the skewness in the bowed serial-position curve.

**E. JAMES ARCHER and BENTON J. UNDERWOOD, Northwestern University.** Retroactive inhibition of verbal associations as a multiple function of the temporal point of interpolation and the degree of interpolated learning.

**B. J. UNDERWOOD and DAVID GOAD, Northwestern University.** Intratask similarity as a factor in distributed practice.

**MERRILL E. NOBLE, Ohio State University.** Proactive and retroactive inhibition after twenty-four hours.

**DAVID A. GRANT, University of Wisconsin.** Partial reinforcement phenomena interpreted in terms of Shannon's mathematical theory of communication.

**IVAN D. LONDON, Tulane University.** An ideal derived equation for a class of forgetting curves.

**D. T. HERMAN, I. G. BROUSSARD and H. R. TODD, University of Wichita.** Intertrial interval and rate of learning serial order picture materials.

#### Concept Formation, Belief and Judgment

**H. B. REED, Ft. Hays Kansas State College,** Chairman

Document 2849, cont.

**MARIANNE L. SIMMEL, University of Illinois.** Conceptual and perceptual thinking in normal adults: some theoretical considerations.

**GERALD RUBIN and K. U. SMITH, University of Wisconsin.** A systematic investigation of intensity of conviction in belief.

**RUTH BAKER HINES, West Lafayette, Indiana.** The formation and retention of concepts as a function of their abstractness.

**DONALD A. GORDON, University of Illinois.** The artistic excellence of oil paintings.

#### Physiological II

**ROBERT S. DANIEL, University of Missouri,** Chairman

Document 2847, cont.

**A. R. GILLILAND, Northwestern University.** Galvanic measures as indicators of fatigue.

**R. C. DAVIS, Indiana University.** Rise and decline of a "stimulus trace" to auditory stimulation.

**CHARLES E. PLATT and DELOS D. WICKENS, Ohio State University.** The effects of anti-cholinesterase agents upon animal behavior: the effect of subcutaneous injections of di-isopropyl fluorophosphate on the learning of a multiple T-maze by the albino rat.

#### Experimental Clinical

**ALBERT I. RABIN, Michigan State College,** Chairman

Document 2850; Microfilm, \$0.50;  
Photocopy, \$2.50

**L. M. STOLUROW and G. R. PASCAL, University of Pittsburgh.** The delayed reaction in mental defectives.

**RANALD M. WOLFE, VA Hospital, Chillicothe, Ohio.** New method for the study of autokinesis and its implications for research in psychopathology.

**GERALD ROSENBAUM, Wayne University.** Stimulus generalization as a function of level of experimentally induced anxiety.

- WALLACE A. RUSSELL, University of Minnesota.** Retention of verbal material as a function of motivating instructions and experimentally-induced failure.
- WILLIAM ROBERT THOMPSON and ERNEST A. HAGGARD, University of Chicago.** Learning and repression in a stress situation.

### Group Dynamics

**ROBERT L. FRENCH, Northwestern University,** Chairman

Document 2850, *cont.*

- PAUL TORRANCE, Kansas State College.** Perception of "self" and "other's" roles in a group related to sociometric choice patterns.
- BERNARD G. ROSENTHAL, University of Chicago.** Development of self-identification in relation to genesis of attitudes towards the self, towards one's own group, and towards members of another group.
- N. FOURIEZOS, M. HUTT and H. GUETZKOW, University of Michigan.** The measurement of self-oriented needs in the discussion situation and their relationship to satisfactions with group outcome.
- BERNARD M. BASS, Louisiana State University.** Interrelations among variables of the leaderless group discussion.
- GRAHAM B. BELL and ROBERT L. FRENCH, Northwestern University.** Leadership position as a function of the composition of the group.
- HARRY P. SHELLEY, University of Michigan.** Perception of the group as a means to members' goals and satisfaction with decision.
- LEONARD BERKOWITZ and ROGER W. HEYNS, University of Michigan.** Content-analysis of group problem-solving behavior.
- THEODOR D. STERLING and BERNARD G. ROSENTHAL, University of Chicago.** The measurement

of freedom of behavior and feeling in the development of a group.

### Industrial II

**C. G. BROWNE, Wayne University, Chairman**

Document 2851; Microfilm, \$0.50;  
Photocopy, \$1.80

- DOUGLAS S. ELLIS, Northwestern University.** Speed of manipulative performances as a function of work-surface height.
- WESLEY OSTERBERG, University of Illinois.** Foreman training and the measurement of supervisory ability.
- OMER R. JONES and KARL U. SMITH, University of Wisconsin.** Measurement of supervisory ability.
- ROY A. DOTY, Chicago, Illinois.** Predicting supervisory performance.
- CHARLES S. DEWEY, Chicago, Illinois.** The clinical evaluation of salesmen in a service industry.
- J. ELLIOTT JANNEY, Cleveland, Ohio.** A suggested basis for the development of professionally sound and personally satisfying client-counselor relationships.
- STANLEY G. DULSKY, Chicago Psychological Institute.** A psychological analysis of the conference training technique in industry.
- JOSEPH W. HARNEY and JOSEPH R. DEVANE, Illinois Institute of Technology.** Relationship between initial performance and subsequent performance on motor tests.
- ALBERT A. CANFIELD, JR., Northwestern University.** The effect of positive *g* on the speed and accuracy of reaching movements.
- JOSEPH E. KING, Chicago, Illinois.** Motor test predicts training time at Elgin Watch Company.

Received June 20, 1950

# PROCEEDINGS OF THE TWENTY-FIRST ANNUAL MEETING OF THE EASTERN PSYCHOLOGICAL ASSOCIATION

CHARLES N. COFER, *Secretary*

*University of Maryland*

THE Eastern Psychological Association held its twenty-first annual meeting in Worcester, Massachusetts, April 20, 21 and 22, under the auspices of Clark University. A total of 1,003 persons was registered. At the preceding meetings, the official attendance was 777, 933, and 591. The meeting was held as part of the celebration of the 60th anniversary of the founding of the Department of Psychology in Clark University, and Clark University sponsored two special celebration programs during the convention. Approximately 1,350 persons attended the Thursday evening Symposium on Genetic Psychology and 850 attended the other celebration program, a lecture by Anna Freud on Saturday afternoon.

Prior to the meeting, the Association had 1,089 members. Two hundred and twenty-one APA members joined EPA during the meeting, and 10 non-APA applicants were elected to membership at the annual business meeting. Three hundred and sixty-three guests attended the meeting and 419 EPA members registered, in addition to those who joined or who were elected. Two hundred and ninety-one persons attended the banquet on Friday evening. Dr. Otto Klineberg was Toastmaster, and the Association was greeted by Dr. Howard B. Jefferson, Clark University, and by the Honorable Andrew Holmstrom, Mayor of Worcester. Distinguished guests, present at the banquet, were Dr. Mary Collins, University of Edinburgh, Dr. R. R. Sears, president-elect of the APA, and Dr. Matsusaburo Yokoyama, PhD, Clark, 1921, of Keiv University, Tokyo.

## PRESIDENTIAL ADDRESS

Dr. Hadley Cantril, president of EPA, gave the main address at the banquet, entitled, "An Inquiry Into the Characteristics of Man." Dr. Cantril spoke of the inadequacies of the current psychological systems of explanation which are unable to

represent or to explain "why man's experience is what it is." "Psychology will meet the challenge it has imposed on itself and which men everywhere expect it to meet only when it becomes fully emancipated from a point of view which permits or encourages the study of isolated individuals, isolated experiences, isolated relationships. Man's thought and behavior can be understood only as processes which take place in full bodied situations." Dr. Cantril stated that a first step in such a task is "to try to describe man's experience in appropriate terms." Explanations by means "of variables as crude as reflexes, instincts, or physiological tensions" are hopeless. President Cantrill suggested two characteristics of man as essential problems for any descriptive or explanatory system. One of these is man's "capacity to sense the value in the quality of his experience." This characteristic is "the catalyst needed to produce nearly all of our actions." But by itself, this characteristic is insufficient "to account for man's curiosity and inquiry, for all the new fears and anxieties that beset him, for his self conscious search to increase the range of the setting in which he can act effectively, for his constant lack of perfect 'adjustment,' for his will-o'-the-wisp search for peace of mind, or for his feeling of personal development and growth." Another characteristic is fundamental, and this is "what can be called the enhancement of the value attributes of experience. This can be regarded as the top standard of human experience, a standard in its own right. It is the capacity man has to sense added value in his experience that accounts for his ceaseless striving, his search for a direction to his activities, for his characteristic unwillingness to have things remain as they are." This occurs within the framework of the culture or group of which a man is a member.

The above summary is inadequate to convey all that Dr. Cantril said, and it is hoped that the full text of his address may soon become available.

## ANNUAL MEETING

1. The Proceedings of the 1949 meeting, as printed in *The American Psychologist*, August, 1949, were accepted.

2. The reports of the Secretary and the Treasurer were accepted, and a budget of \$1,605 was approved. The Secretary was authorized to spend up to \$350.00 from surplus funds for addressograph equipment.

3. The *Program Committee*, Alphonse Chapanis, Chairman, reported the acceptance of 102 papers, the rejection of 29 and the withdrawal of two.

4. The *Elections Committee*, Otto Klineberg, Chairman, and Lyle H. Lanier, reported the election of Carl I. Hovland as President (1950-1951) and of Neal Miller and Harold Schlosberg as members of the Board of Directors for the term 1950-1953. Frank Beach was elected to fill the unexpired term of Carl Hovland on the Board of Directors (1949-1952).

5. The Board reported the following appointments: *Auditing Committee* (1950), Harold Schlosberg, Carl Pfaffmann; *Program Committee*, J. M. Bobbitt (1950-1953) to replace S. S. Sargent whose term expires; W. C. H. Prentice to be Chairman, 1950-1951; Alphonse Chapanis continues as senior member; *Representative on the Council*, A.A.S. (1950-1952), T. G. Andrews.

6. The *Membership Committee*, Arthur Jenness, Chairman, and John W. Volkmann, reviewed applications of 12 non-APA members. Upon recommendation of the Board of Directors, 10 were elected by the membership and two were rejected.

7. Wilbert S. Ray, Trinity College, was elected Treasurer for three years (1950-1953), replacing W. A. Bousfield whose term expired.

8. *Committee on Academic Freedom*, E. B. Newman, Chairman, D. W. Chapman and J. J. Gibson. The Committee reported its activities of the past year, and its report and the following two resolutions, which it presented, were approved:

Resolved that the Eastern Psychological Association endorse the 1940 statement of principles on Academic Freedom and Tenure of the American Association of University Professors, and that a report of this action be transmitted to the Committee on Academic Freedom of the American Psychological Association and to the Executive Secretary of the American Association of University Professors.

The second resolution was embodied in a telegram sent to E. C. Tolman, University of California.

The Eastern Psychological Association, assembled at Worcester, records its approval of the stand taken by psychologists and other faculty members of the University of California in opposition to a special oath for teachers denying political affiliations. We assure you of our desire to extend any effective assistance we can for the security or employment of the persons involved should events render that necessary.

The Committee was continued for 1950-51, with the instruction to draft a statement relative to the need for freedom in scientific research.

9. The 1951 meeting will be held at Brooklyn College on March 30 and 31. The membership voted to hold the 1952 meeting in Atlantic City.

10. The members voted to extend the thanks of EPA to Clark University, the Worcester Convention Bureau, the Hotel Sheraton, and to the Committee on Local Arrangements for the excellent facilities and arrangements for the annual meeting and for the generous hospitality and friendliness extended to the membership. The Local Arrangements Committee consisted of John E. Bell, Chairman, Heinz Werner, Gordon T. Gwinn, Seymour Wapner, and Vernon Jones, all of Clark University.

11. There was extensive discussion of a resolution, offered by the New York Society of Clinical Psychologists, Inc., protesting the action of the Veterans Administration in eliminating 12 GS9 (P-3) jobs in the New York office because of the anxiety this action has caused the present incumbents. A motion to table this resolution was carried unanimously.

12. The audited financial statement of the treasurer, Weston A. Bousfield, is presented below:

## FINANCIAL STATEMENT AS OF MAY 1, 1950

## For The Fiscal Year 1949-1950

## INCOME

Membership Dues	
Dues for current year, 1949-50 .....	\$1164.00
Arrears for 1948-49 .....	191.00
Arrears for earlier years .....	25.00
Dues paid in advance .....	96.00
Guest fees .....	362.00
Sale of programs at Annual Meeting .....	15.75
Interest on savings account .....	42.77
From host colleges at Springfield .....	10.00
Total Income .....	\$1906.52

## EXPENDITURES

Publication of Proceedings .....	\$ 140.63
Office of Secretary .....	500.00
Office of Treasurer .....	207.50
Printing, supplies, postage .....	452.79
Traveling expenses of officers .....	31.76
Program Committee .....	29.45
Contingency expenses .....	47.20
Miscellaneous .....	4.61
 Total Expenditures .....	\$1413.94
Surplus for 1949-50 .....	\$ 492.58

## BALANCE SHEET

Cash: Bank of New York and Fifth Avenue Bank .....	\$1705.82
New York Savings Bank .....	2166.76
 Total Cash .....	\$3872.58
Capital: As of May 1, 1949 .....	\$3380.00
Surplus for 1949-50 .....	492.58
 Total Capital .....	\$3872.58

We, the Auditing Committee for the year 1949-50, have examined the records in connection with this statement and find it to be a true and correct account.

Signed .....

CARL PFAFFMANN

HAROLD SCHLOSBERG

## PROGRAM

## Thursday Evening

## Symposium on Genetic Psychology

HEINZ WERNER, *Chairman*

ANNA FREUD, *London, England*. Psychoanalytic contributions to genetic psychology.

LAWRENCE K. FRANK, *New York City*. Genetic psychology and its prospects.

ROBERT R. SEARS, *Harvard University*. An experimental approach to genetic psychology: the forms of aggression in young children.

This Symposium was presented for the EPA by Clark University in celebration of the Sixtieth Anniversary of the founding of its Department of Psychology.

## Friday Morning

## Clinical A

STANLEY G. ESTES, *Chairman*

Experimental studies with the Szondi test. MOLLY HARROWER, *New York City*.

The implications of certain assumptions involved in the use of the TAT. J. R. WITTENBORN, *Yale University*.

An experimental critique of some assumptions underlying the Negro version of the Thematic Apperception Test. BERNARD F. REISS and EMANUEL SCHWARTZ, *Hunter College and Post-graduate Center for Psychotherapy*.

The effect of experimental anxiety on imagination. DAVID C. McCLELLAND and ROBERT C. BIRNEY, *Harvard University and Wesleyan University*.

Rorschach performance of far advanced and less severely ill tuberculosis patients. RICHARD L. NEWTON, *Veterans Administration (Pittsburgh) and University of Pittsburgh*.

Personal and social factors in rehabilitation of the ex-patients. DANIEL H. HARRIS, *Saranac Lake Study and Craft Guild*.

Specificity of bodily reactions to stress. ROBERT B. MALMO, CHARLES SHAGASS and FREDERICK H. DAVIS, *Allan Memorial Institute of Psychiatry and McGill University*.

## Personality

THELMA G. ALPER, *Chairman*

A preliminary test of role-playing ability. WILLIAM A. McCLELLAND, *Brown University*.

Personality and empathy. ROSALIND DYMOND, *Mount Holyoke College*.

The effect of probability, desirability, and "privilege" on the stated expectations of children. ROSE W. MARKS, *University of Pennsylvania*.

Accuracy of self-appraisal as related to authoritarian or democratic personality tendencies. NAOMI STEWART and GERTRUDE L. ABRAMSON, *American Jewish Committee*.

The relative persistence of cognitive distortion as related to ego-involvement. EUGENE E. LEVITT, *Columbia University*.

Personality factors in reactions to a stressful psychomotor task. MARVIN WALDMAN, *Worcester State Hospital*.

Personality factors and some aspects of social behavior. LESLIE PHILLIPS and HERBERT ALTSCHULER, *Worcester State Hospital*.

#### Developmental

HEINZ WERNER, *Chairman*

Maturation for school readiness in mentally deficient children with I.Q.'s of 45 to 70. L. L. KOLBURNE, *The Kolburne School*.

A comparison of white and Negro pre-school children in Goodenough IQ and language development. RITA D'ANGELO, *Fordham University*.

A study of the prelinguistic speech development of institutionalized infants. REGINA MOLLOY FISICHELLI, *Fordham University*.

An experimental demonstration of the learning and generalization of imitation in children. JEANNE R. LEVY, *University of Pennsylvania*.

The influence of age and food-deprivation upon the hoarding behavior of rats. J. H. PORTER, F. A. WEBSTER and J. C. R. LICKLIDER, *Washington University (Missouri) and Harvard University*.

Competition over food in non-hungry adult homozygous mice as a result of hunger-motivated competition during infancy. EMIL FREDERICSON, *Roscoe B. Jackson Memorial Laboratory*.

#### Experimental

W. C. H. PRENTICE, *Chairman*

Performance on the two-hand coordinator as a function of the planes of operation of the manipulators. EUGENIA NORRIS and S. D. S. SPRAGG, *University of Rochester*.

The accuracy of knob settings as a function of knob diameter and of angular extent of movement. DONALD B. DEVOE and S. D. S. SPRAGG, *University of Rochester*.

The effect of increased associative strength on problem solution. ABE J. JUDSON, *University of Maryland*.

The extinction of conditionings to verbal stimuli. GREGORY RAZRAN, *Queens College*.

Some stimuli disorganize behavior. FREDERICK C. FRICK and N. D. SQUIRES, *Harvard University*.

Transmission of sound in the cochlea. MERLE LAWRENCE, *Princeton University*.

The auditory perception of time-frequency relations. W. R. GARNER, *The Johns Hopkins University*.

#### Friday Afternoon

##### Clinical B

JOHN E. BELL, *Chairman*

The problem of prediction in the Rorschach test.

FREDERICK WYATT, *Cushing Veterans Administration Hospital (Framingham, Massachusetts)*.

Changes in adjustment following psychotherapy as reflected in certain Rorschach "signs." S. THOMAS CUMMINGS and ROY HAMLIN, *Pittsburgh Veterans Administration and University of Pittsburgh*.

An analysis of the unique changes between pretest and endtest Rorschach performance of a patient showing improvement in psychotherapy. ROY HAMLIN, *Pittsburgh Veterans Administration and University of Pittsburgh*.

A Rorschach diagnostic formula for some schizophrenics and neurotics. Z. A. PIOTROWSKI and N. D. C. LEWIS, *New York Psychiatric Institute*.

Further report on the quantification of the Bender-Gestalt Test: its reliability and validity for adults. G. R. PASCAL and B. J. SUTTELL, *Western Psychiatric Institute and Clinic*.

Case history data and prognosis in schizophrenia. LESLIE PHILLIPS, *Worcester State Hospital*.

Testing the predictive value of combined objective scores to a learning and sorting procedure. HERBERT A. RUESCH and BERNICE FARLEE, *Bulter Hospital, Providence*.

#### Perception

SEYMOUR WAPNER, *Chairman*

The perception of error. LEO POSTMAN, JEROME S. BRUNER, and RICHARD WALK, *Harvard University*.

Expectation and judgment of color. JEROME S. BRUNER, LEO POSTMAN, and JOHN RODRIGUES, *Harvard University*.

The influence of past experience on the size-distance relationship. WILLIAM M. SMITH, *Princeton University*.

An investigation of the relationship between perception and level of security. PHILIP K. HASTINGS, *Princeton University*.

The influence of frustration on the reproduction of visually-perceived forms. SHELDON J. KORCHIN, JEROME L. SINGER, and ROBERT G. BALLARD, *Veterans Administration Mental Hygiene Clinic (Philadelphia)*.

Autonomic discrimination without awareness. R. A. McCLEARY and R. S. LAZARUS, *The Johns Hopkins University*.

Quantitative study of the Purkinje after-image on cathode-ray tube screens. G. H. MOWBRAY and J. W. GEBHARD, *Johns Hopkins University*.

### Learning A

CARL I. HOVLAND, *Chairman*

Effect of sodium amyral on an approach-avoidance conflict in cats. CLARK J. BAILEY, *Yale University*.

Transfer under punishment. RUTH PAGE EDWARDS, *Harvard University*.

A comparative study of "secondary reinforcement" in fish (*Tilapia macrocephala*) and rat. J. V. HARALSON and M. E. BITTERMAN, *Cornell University*.

The relation between effort and rate of extinction. WALTER C. STANLEY, FRED D. SHEFFIELD and WALTER WEISS, *Brown University and Yale University*.

The effects of drive intensity upon learning. HENRY GLEITMAN, *Swarthmore College*.

Can reinforcement theory explain conditioned responses based on shock? ELEANOR J. GIBSON, *Cornell University Behavior Farm*.

An indicator of anxiety during light-avoidance. WILMA A. WINNICK, *Queens College*.

### Vision A

NEIL R. BARTLETT, *Chairman*

Visual acuity at scotopic levels of illumination. AILENE MORRIS and FORREST L. DIMMICK, *U. S. Naval Medical Research Laboratory*.

A comparison of reaction times under conditions of binocular and monocular stimulation. MAUREEN BEGLEY, *Rosemont College*.

Interaction of rods and cones in after sensations. THEODORE KARWOSKI and MATTHEW WAYNER, *Dartmouth College and Tufts College*.

A comparison of monocular and binocular critical flicker frequencies. FRED H. IRELAND, *Fordham University*.

Some supra-threshold area-brightness relationships. R. M. HANES, *The Johns Hopkins University*.

The electrical response of the human retina as a function of stimulus intensity and retinal area.

LORRIN A. RIGGS and ROBERT M. BOYNTON, *Brown University*.

### Symposia

#### New Approaches to Space Perception

CLARENCE H. GRAHAM, *Chairman*

##### Speakers:

JAMES J. GIBSON, *Cornell University*. Tridimensional perception as a corollary of size and shape constancy.

HANS WALLACH and D. N. O'CONNELL, *Swarthmore College*. The perception of tridimensional form.

##### Discussant:

RUDOLF ARNHEIM, *Sarah Lawrence College*.

#### Boundaries of Social Psychology

WILBERT S. RAY, *Chairman*

##### Participants:

GORDON W. ALLPORT, *Harvard University*

JEROME S. BRUNER, *Harvard University*

EUGENE L. HARTLEY, *College of the City of New York*

HELEN PEAK, *Connecticut College*

RICHARD T. SOLLENBERGER, *Mount Holyoke College*

#### The Relationship of Client-Centered Therapy to Other Therapeutic Orientations

MARIAN R. BARTLETT, *Chairman*

##### Speakers:

JOHN DOLLARD, *Yale University*. Learning theory and psychotherapeutic approaches.

NICHOLAS HOBBS, *Columbia University*. Personality theory and psychotherapeutic approaches.

AUSTIN B. WOOD, *Brooklyn College*. Transference in psychotherapeutic approaches.

### Friday Evening

#### Banquet and Presidential Address

Toastmaster: OTTO KLINEBERG, *Columbia University*.

Greetings from the University. HOWARD B. JEFFERSON, *President, Clark University*.

Presidential Address: An inquiry into the characteristics of man. HADLEY CANTRIL, *Princeton University*.

### Saturday Morning

#### Clinical C

G. WILSON SHAFFER, *Chairman*

The differentiation of delinquent from non-delinquent boys by means of a homonym free association test. RICHARD F. D. HEINEMANN, *Fordham University*.

An experimental modification of a gradient of stuttering frequency. ALBERT E. GOSS, *University of Massachusetts*.

Comparative study of psychoneurotic veterans who continue and discontinue psychotherapy. MARTIN G. STAIMAN, *Veterans Administration Mental Hygiene Clinic (Rochester)*.

Scatter on the object assembly test and perceptual patterns in schizophrenia. DORIAN M. ROSE, *Worcester State Hospital and Clark University*.

A study of aggression in psychopathology. GEORGE W. ALBEE, *University of Pittsburgh and Western Psychiatric Institute and Clinic*.

A psychological study of a suicide. JULES D. HOLZBERG and ELEANOR R. CAHEN, *Connecticut State Hospital*.

Psychogenic and neurological factors in Maladie de Tic. MILTON S. GURVITZ, *Hillside Hospital (Bellerose, New York)*.

#### Learning B

CLAUDE E. BUXTON, *Chairman*

Continuity in discrimination learning with "easy" and "hard" cues confounded. FRANK H. BORING, *Princeton University*.

Bar-pressing behavior of sated rats. MARTIN KOHN and NEAL E. MILLER, *Yale University*.

The effects of some early experiences in the latent learning of adult rats. RICHARD CHRISTIE, *Sarah Lawrence College*.

A further test of the ability of rats to learn the location of food when motivated by thirst. JOSEPH H. KANNER and HOWARD H. KENDLER, *New York University*.

Experiments on relational learning in the rat. E. L. SALDANHA and M. E. BITTERMAN, *Cornell University*.

Extinction of a discrimination without performance of the choice response. JAMES DEESE, *The Johns Hopkins University*.

#### Social

S. STANSFELD SARGENT, *Chairman*

The effect of an audience on choice behavior. THELMA G. ALPER and SEYMOUR WAPNER, *Clark University*.

Stereotype persistence and change in college students. G. M. GILBERT, *Princeton University*.

Racial stereotypes among Negro college students since 1935. MAX MEENES, *Howard University*.

Development of a technique for measuring social-emotional climate in the classroom. JOHN WITHELL, *Brooklyn College*.

Testing certain assumptions regarding intercultural attitudes. SETH ARSENIAN and ETHELLE C. FRIEDMAN, *Springfield College and Bay Path Junior College*.

Russian-German sympathy during World War II; a reinterpretation of data from the U. S. Strategic Bombing Survey. H. L. ANSBACHER, *University of Vermont*.

Discussion techniques in a series of U. N. debates. LILLIAN WALD KAY, *Washington Square College and New York University*.

The importance of the discussion method and the use of films for mental health education; with special reference to the U. S. zone of Germany. HILDEGARD DURFEE, *Forest Hills, New York*.

#### Physiological

T. G. ANDREWS, *Chairman*

A new method of measuring reaction time. HENRY P. BIRMINGHAM and CURTIS E. TUTHILL, *Naval Research Laboratory and George Washington University*.

The relation of adrenal cortical response to some aspects of psychological functioning in normal men. AUSTIN W. BERKELEY, *Worcester State Hospital and Worcester Foundation for Experimental Biology*.

The effect of electroshock convulsions upon a habit system in the white rat. HARRY W. BRAUN, *University of Pittsburgh, Western Psychiatric Institute and Clinic*.

Discrimination of weights by men with penetrating lesions of parietal lobes. HANS-LUKAS TEUBER, MORRIS B. BENDER, and WILLIAM S. BATTERSBY, *New York University College of Medicine*.

Is visual memory localized in the striate cortex? C. T. MORGAN, *The Johns Hopkins University*. Effect of cortical lesions upon the hoarding behavior of the rat. JOHN P. ZUBEK, *The Johns Hopkins University*.

Analysis of electroencephalograms from a case of bilateral removal of eyes. JOHN L. KENNEDY and FLORENCE E. GRAY, *Tufts College*.

#### Saturday Afternoon

##### Vision B

FORREST L. DIMMICK, *Chairman*

Errors made by ground observers in reporting the time and direction of airplanes. JOHN D. COAKLEY and JOSEPH E. BARMACK, *Dunlap and Associates, Inc. (New York City)*.

The effect of training on the discrimination of visual number. A. LEIGH MINTURN and THOMAS W. REESE, *Mount Holyoke College*.

The discrimination, by counting, of the number of successive visual stimuli. E. K. ELLIS and JOHN VOLKMANN, *The Johns Hopkins University and Mount Holyoke College*.

A resolution of the controversy over the validity of blink rate as an index of visual efficiency. C. L. WOOD and M. E. BITTERMAN, *Cornell University*. Changes in CFF resulting from prolonged visual work under high and low illumination. T. A. RYAN and M. E. BITTERMAN, *Cornell University*. Accommodation, convergence, and their relation to apparent distance. WILLIAM H. ITTELSON, *Princeton University*.

A psychological scale for visual extent. E. A. GILLIATT and JOHN VOLKMANN, *Mount Holyoke College*.

##### Comparative

FRANK A. BEACH, *Chairman*

The rat's rate of drinking as a function of water deprivation. J. HARRY HILL, *The Johns Hopkins University*.

Salt preference of the rat determined by a single stimulus method. ELIOT STELLAR and ISRAEL WEINER, *The Johns Hopkins University*.

The effect of salt ingestion upon the preference for sodium chloride solutions. OGDEN R. LINDSLEY and CARL PFAFFMANN, *Brown University*.

Secondary reinforcement in specific hungers. JOHN K. BARE, *College of William and Mary*.

Reinforcing power of a sweet taste. THORNTON B. ROBY and FRED D. SHEFFIELD, *Yale University*.

A decrease in behavioral measures of hunger produced by the hypothalamic lesion that causes increased food intake. NEAL E. MILLER and J. A. F. STEVENSON, *Yale University*.

A study of conditioned heart-rate in different learning situations. R. A. McCLEARY, *The Johns Hopkins University*.

##### Evaluation and Measurement

VERNON JONES, *Chairman*

A short-cut method for analysis of variance. WILLIAM LEROY JENKINS, *Lehigh University*.

The intelligence of soldier-criminals. EDMUND F. FUCHS and CONRAD CHYATTE, *U. S. Army and U. S. Air Force*.

A study of the prognostic value of psychological test levels. ISIDOR W. SCHERER, *Veterans Administration Neuropsychiatric Hospital (Northhampton, Massachusetts)*.

Selection tests for department store cashier-wrapers. WALTER W. WILKE and WILLIAM D. GLENN, JR., *New York University*.

The relationship between the quality of pupils' compositions and their measured intelligence. IRVING LORGE and LORRAINE KRUGLOV, *Columbia University and City College of New York*.

Development and standardization of the ROTC qualifying examination for 1949-1950. HYMAN BRANDT, *Personnel Research Section, AGO*.

##### Lecture

ANNA FREUD. The application of psychoanalysis to problems of early development of children.

This lecture was presented for the EPA by Clark University.

##### Social Hour

Host: Massachusetts Society of Clinical Psychologists.

*Received May 23, 1950*

# PROCEEDINGS OF THE TWENTIETH ANNUAL MEETING OF THE ROCKY MOUNTAIN BRANCH OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

LAWRENCE S. ROGERS, *Secretary-Treasurer*  
*Veterans Administration, Denver*

THE Rocky Mountain Branch of the American Psychological Association held its 20th annual meeting with the Psychology Section of the Colorado-Wyoming Academy of Science on May 12 and 13, 1950, at the Colorado A & M College, Fort Collins, Colorado. Dr. Karl F. Muenzinger, President, served as chairman.

A change in the constitution was approved by mail ballot so that in the future officers of the Branch may be either fellows or associates of the American Psychological Association instead of only fellows. All who voted were in favor of this change. On the motion of Dr. Portenier the members present voted to confirm the mail ballot.

Dr. J. Lewis Yager reported briefly on the activities of the Colorado Psychological Association in connection with its efforts to have a certification law ready for the next legislature.

Life membership in the Branch was voted to Dr. Jacob D. Heilman, life member of the American Psychological Association, on the motion of Dr. Bruce.

Dr. Howells reported for a special committee to consider the feasibility of having a meeting in Utah. Upon the motion of Dr. Portenier it was voted to meet at Utah when convenient and when it can be arranged. A special committee, consisting of Doctors Bruce, Crawley, and Howells, was appointed to investigate the relationship of the Branch with the Colorado-Wyoming Academy of Science.

Officers of the Branch elected for the year 1950-1951 are: President, Dr. Theodore H. Cutler, University of Denver; President-elect, Dean David H. Morgan, Colorado A & M College; Dr. Lawrence S. Rogers, VA, Denver, continues as Secretary-Treasurer.

## PROGRAM

### *Friday Morning*

DAVID H. MORGAN, *Chairman*

Difference between neurotics and schizophrenics on the Wechsler-Bellevue Scale. LAWRENCE S. ROGERS, *VA Mental Hygiene Clinic, Denver*.

An experimental study of incidental features of the Szondi Test. HAROLD DEAN BLESSING, GEORGE S. BEDFORD, and DONALD D. GLAD, *Colorado Psychopathic Hospital and the University of Denver*.

An intertest validation study of the Rorschach and Thematic Apperception Test. BARBARA W. HAMMACK and DONALD D. GLAD, *Colorado Psychopathic Hospital and the University of Denver*.

Group therapy with paranoid schizophrenics: V. Method of investigation. DONALD D. GLAD and ROBERT RAINES, *Colorado Psychopathic Hospital and the University of Denver*.

A critical review of the Rorschach Test. OLOV GARDEBRING, *University of Utah*.

Psychological sequelae in 15 cases of Western Equine Encephalitis. DONALD W. MULDER, MURIEL PARROTT, and MARGARET THALER, *Colorado Psychopathic Hospital, Denver*.

Alternation as a function of absolute amount of work. JEAN P. THOMPSON, *New Mexico State College*.

### *Friday Afternoon*

THEODORE H. CUTLER, *Chairman*

Goal orientation as a factor in maze learning. MERRELL E. THOMPSON, *New Mexico State College*.

The effects of sensory deprivation on food preferences in an immediate choice situation. IRENE P. ROBINSON and CALVIN W. THOMSON, *University of Utah*.

The implications of secondary reinforcement for delayed reward learning in a visual discrimination problem. MAURICE P. SMITH and HARRY A. SHOEMAKER, *University of Colorado*.

Role flexibility in group interaction. JACK R. GIBB and GRACE PLATTS, *University of Colorado*.

The effect of a preliminary consummatory response upon performance in a sample learning situation.

- I. Experimental results. J. K. BUSH and ROBERT H. BRUCE, *University of Wyoming*.
- II. Theoretical significance. ROBERT H. BRUCE and J. K. BUSH, *University of Wyoming*.

*Saturday Morning*

S. H. CRAWLEY, *Chairman*

Sex and age differences in occupational values of

college students. CARROLL H. MILLER, *Colorado A & M College*.

Personality as revealed through autobiographies. LILLIAN PORTENIER, *University of Wyoming*.

Adjustment of adolescent girls to family life. DAVID H. MORGAN, *Colorado A & M College*.

General semantics in group development. ELWOOD MURRAY, *University of Denver*.

A comparison of recall and recognition types of measurement on verbal items, and their implications for deterioration testing. EDWARD E. GLIK, *Fitzsimons General Hospital, Denver*.

Some comparisons and correlations between MMPI and Rosenzweig P-F study scores in a neuro-psychiatric hospital sample. LEO J. HANVIK, *Colorado A & M College*.

*Received May 22, 1950*

# TRENDS IN REGISTRATION OF UNDERGRADUATE PSYCHOLOGY STUDENTS

ALICE GUSTAV

New York University

THE many new professional problems created by the greatly expanded number of psychologists in recent times has led to various surveys of persons taking graduate work or already employed in this field. Usually, the undergraduate population in psychology has been overlooked, although the vastly increased number at that level is important for several reasons. First, for many students this will be their sole contact with academic psychology and therefore our only opportunity to inculcate in them realistic and favorable attitudes toward the field. Second, many people may wish to use psychology as a "service" profession, i.e., a valuable adjunct to their main work. Just as lawyers often study accounting, so they may find psychology useful. Third, large undergraduate registration provides more teaching opportunities for psychologists. Finally, without undergraduate schools to provide a source of recruitment, the graduate schools could not exist. That there has begun to be an awareness of this latter point is indicated by a "Notes and News" item in the January 1950 issue of the *American Psychologist* (p. 26) which ranked the leading undergraduate producers of the 1949 crop of PhD's in psychology. Noting that New York University ranked second added further interest to the following survey.

The study reported here was begun because of attention attracted by the large number of psychology majors in the 1949 Washington Square College graduating class. It should be noted at this point that Washington Square College is only one division of New York University and that the three other colleges and schools within the University which have undergraduate psychology departments are excluded from this survey.

Examination of the Washington Square College graduation records for the years 1939-1949, inclusive, yielded the information summarized in Table 1. The year 1939 was chosen as a starting point since it preceded the war-time publicity and current boom of psychology.

As indicated in Table 1, the absolute number of students majoring in psychology followed the trend for total number of graduates, dipping during the war years to a low point in 1944 and then rising again. However, when the numbers of psychology majors per year are converted into percentages of their respective graduating classes, another trend becomes apparent. With the exceptions of 1942 and 1944, the proportion of psychology majors has increased steadily from 3 per cent in 1939 to 13 per cent in 1949. In terms of absolute numbers, the rise in undergraduate students specializing in psychology has important implications for the future of professional psychology. Percentage-wise, it is of interest to the college, since an increased proportion of majors in one department means decreased proportions in other departments.

From the data available, it is impossible to determine the reasons for such an increase. The writer examined the admissions records for the 1949 class and found that psychology as a profession must have been relatively unknown to the students at an earlier time. Only 24 students of the entire graduating class of 1527 had, at the time of their admission to the college, expressed an interest in psychology either as a first or a second vocational choice. Perhaps contributing factors to their later selection of psychology as a major included recent newspaper and movie publicity, veterans' contact with war-time use, or the intrinsic interest of the subject learned while the students took it as a required course. All students in Washington Square College are required to complete one year of either introductory psychology or philosophy. The basic psychology course consists of a six-point lecture class in which two textbooks are used—Munn's *Psychology: The Fundamentals of Human Adjustment* and Crafts' *Recent Experiments in Psychology*.

In terms of academic achievement, the psychology majors seem to be fairly representative of the college as a whole. As can be seen from

Table 1, in all but two years roughly 50 per cent of the psychology majors were to be found above and below the median of each graduating class on the basis of final average. In 1942 only 37 per cent of the psychology majors were in the upper half of the class and 63 per cent were in the lower half, while in 1946 practically the reverse was true, with 61 per cent in the upper half and 39 per cent in the lower half of the class.

The number of psychology majors graduating *cum laude* or better has varied in different years. Only in two years, 1939 and 1944, did no psychology major achieve any such honors. On the other hand, in some years they have captured more than the expected proportion as compared with other departments. For example, in 1949 a psychology major was one of the three persons graduating *summa cum laude* in the entire class of 1,527. Degrees of *cum laude* or better are awarded on the basis of certain grade averages to students who

have completed a minimum of 64 points in Washington Square College. The number of people achieving such required averages has been below the maximum limit of 8 per cent of the graduating class.

The number of psychology majors admitted to Phi Beta Kappa has also varied in different years and in only two years, 1939 and 1941, did they fail to make any showing at all. In the past, approximately 5 to 7 per cent of each graduating class has been elected to Phi Beta Kappa.

Another important type of data concerns the subjects which students find related to psychology. Table 1 shows the three most popular minor fields of specialization selected by the psychology majors. If students really plan a career in psychology, then the related fields of sociology and biology might account for the large number of psychology majors who select them as minors. Also, many pre-medical students use the psychology-biology combination, while the psychology-English grouping is popular

TABLE 1  
*Trends in registration of undergraduate psychology majors at Washington Square College*

	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Total no. Washington Square Coll. graduates	709	687	596	543	451	390	427	491	854	1292	1527
No. psychology majors	19	32	42	35	30	17	33	44	85	146	197
Per cent of total class	3	5	7	6	7	4	8	9	10	11	13
Psychology majors:											
1. Per cent in each quartile of class, according to final average:											
4th (highest)	26	19	21	20	20	35	21	41	27	23	29
3rd	16	28	24	17	27	12	21	20	27	24	24
2nd	32	28	29	26	30	18	40	28	25	23	24
1st	26	25	26	37	23	35	18	11	21	30	23
2. No. graduating <i>cum laude</i> or better	0	3	4	3	1	0	3	5	3	8	12
3. No. in Phi Beta Kappa	0	1	0	1	2	2	2	7	2	8	8
4. No. selecting minors in:											
Sociology	2	3	4	8	9	7	5	5	15	36	46
English and Speech	3	12	15	8	7	5	12	18	22	29	30
Biology	2	5	5	5	4	0	3	2	15	25	26
No. psychology minors	89	80	45	67	52	70	81	82	132	197	250
Per cent of total class	13	12	8	12	12	18	19	16	15	15	16
No. of psychology minors selecting majors in:											
Sociology	24	4	10	18	18	33	41	25	43	39	57
English and Speech	17	4	9	11	11	7	6	17	19	33	37
Biology	22	32	12	12	5	7	8	11	28	61	63
Commerce and Retailing	5	11	0	8	4	5	8	14	13	26	37

with pre-law and pre-teaching students. The balance of the majors had their minors spread over many fields, e.g., foreign languages, history, etc.

From Table 1, which also presents data on psychology minors, it can be seen that both the absolute number and the percentage of students using psychology as a minor field of specialization are impressive. However, there is a somewhat different distribution than for the majors. Unlike the figures on majors, the absolute numbers of minors do not follow the total college registration but, for an unknown reason, have the lowest point in 1941 instead of 1944. The percentage figures also differ from those of the majors. The minors began in 1939 at a rather high proportion, 13 per cent, then varied through the years, ending in 1949 at 16 per cent, not far from the original percentage.

Returning to the problem of which major subjects students select when psychology is their minor, we find in Table 1 very much the same answer as for the majors. People who minored in psychology tended to major in biology, sociology, English and

speech, commerce and retailing. The first four subjects are the same as those in which people who majored in psychology tended to minor. Thus, the same assumptions may be made concerning the usefulness of such combinations. Students majoring in commerce and retailing ordinarily intend to go into business and probably hope to make practical application of psychology. The balance of the minors had their majors in a wide variety of other departments.

Whether the present interest in psychology among undergraduates will continue to increase is a question which cannot be answered on the basis of the above data. It seems unlikely that psychology could continue to attract ever larger numbers of students away from other subjects as majors and minors. On the other hand, there is no reason to suppose that the immediate future will see any marked decrease because of a possible loss of interest in the field.

*Received March 22, 1950*

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## Comment

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### A Clinician Answers Guthrie

To the Editor:

The April 1950 issue of the *American Psychologist* contained two addresses, delivered in 1949 before divisions of the American Psychological Association, which represent opposing trends in academic psychology. Beach's article was welcomed by clinically minded me; for it displayed unmistakable signs of psychology's New Look in statements like, ". . . if we (experimentalists) intend to maintain our status as indispensable contributors to the science of behavior, we will have to broaden our attack upon the basic problems of the discipline," and "We do everything to make them (students) into first rate experimentalists. And then we give them so narrow a view of the field of behavior that they are satisfied to work with the same kinds of problems and to employ the same methods that have been used for the past quarter of a century." By electing to their presidency a man with the New Look, experimentalists have demonstrated that, by growing in step with the times, they are developing attitudes which are similar to those that have been forced for some time upon the more practically minded people in the fields of clinical, applied, industrial, and social psychology.

The Old Look, as exemplified by Guthrie's article in the same issue, would be ignored if not for the fact that attitudes such as those he expresses are daily pushing out of academic work and into more lucrative and harmonious pursuits some of the brighter New Look young people. Expulsion of men with applied interests from academic psychology departments, as suggested by Guthrie, would undoubtedly injure most the "systematists" and "purists," for it is these last who have been basking in the reflected prestige won for all of psychology by the practical psychologists rather than the reverse. Guthrie has apparently repressed the fact that the present boom in psychology (which has resulted in unprecedented availability of research funds and students for all areas of the discipline) can be attributed almost exclusively to the popularity earned for the entire field by the successful practical application of psychological findings and method.

In many departments the applied people feel that the gains they have earned are too often improperly diverted from applied interests and devoted to what often appears to the applied person as useless, so-called "pure" research. Nevertheless, the people in the applied areas whom I know prefer retaining the present marriage between applied, general, systematic, and other areas of psychology. Give the systematist and the ex-

perimentalist a New Look, and the divisive differences between him and a clinical psychologist or a polling expert immediately vanish. A rigid cleavage between the New and the Old would eventually compel the New Look Department to give its own courses in systematic and experimental psychology, for these courses given under a rigid holier-than-thou Old Look Department would lose all value to the applied psychologist rather than remain the basic psychological courses they should be in today's curriculum.

Because clinical psychologists are psychologists first and clinicians second, Guthrie's recommendation that they be put under a department of medicine is particularly objectionable. What distinguishes mind from body, psychology from physiology, is the instruments and methods used. Ours are psychological methods—the very same kinds of methods the systematist and the experimentalist would use if he were to carry out Beach's recommendations to their ultimate conclusions. Under medicine we would lose the breadth, social understanding, and scientific method which happily distinguish the clinical psychologist from the medically oriented psychiatrist. To assign clinical psychology to the medical department is tantamount to confessing that we psychologists have little to offer. Unfortunately, so long as psychology departments are dominated by the Old Look, this confession is too justified.

There is no true conflict between applied and pure research, nor between the clinician and the systematist. They are equally scientific (in that they all seek results which are perfectly communicable and verifiable, i.e., repeatable); all strive equally to further human knowledge and welfare; and each borrows from, and aids, the other in pursuit of this common selfless end. Only when one becomes so defensive about his position in the psychological orbit as to place his constructs, theories, and interests above those of human progress do differences arise; the ensuing conflict is then not between applied and pure research, nor between clinical and systematic psychology, but between the regressive defensiveness of the Old and the progressivism of the New Look.

GABRIEL ELIAS  
University of Arkansas

### Should Psychological Theory and Practice Be Divided?<sup>1</sup>

To the Editor:

In a recent article entitled "The Status of Systematic Psychology," Guthrie proposes "that psychology be

<sup>1</sup> The opinions or assertions contained in this paper are those of the author and are not to be construed as official.

recognized as a basic science and not as a field of practice. . ." This leads him to raise the question, which supposedly he would answer affirmatively, ". . . if acceptable to the Medical School, would it be practicable to make the Department of Psychiatry a department of psychiatry and clinical psychology leading to a degree of doctor of clinical psychology for a limited number of persons?" The graduates of this training program would, presumably, engage in the "practice" of clinical psychology. It seems to me that these proposals would separate psychological theory and practice, "pure" (basic science) and "applied" (particularly clinical) psychology, in the training process and in occupational activities. It is my opinion that theory and practice, "pure" and "applied" psychology, cannot be separated in training without serious detriment to the student and faculty. Further, they cannot be divided into two distinct occupational lines (teaching, theorizing and/or research versus "practice") without seriously affecting both endeavors in an adverse manner.

One of the adverse features of this proposed division into "pure" and "applied" science would be the necessity of maintaining two departments of psychology. The clinical psychology student would have to work with two different psychology departments in the medical and graduate schools. Administratively, with divided responsibilities and facilities for training, this does not appear to be a good solution. Under such an arrangement, students would often miss a great deal of training and integration of their work that they could obtain under the auspices and guidance of one department. It is very difficult to organize and maintain interdisciplinary programs for training psychologists, or any other profession. This is exceedingly unfortunate, and the problem needs solution, but dividing the psychological staff into two or more administrative organizations would not seem to help this matter.

Further difficulties and complications arise from the fact that there are other types of "applied" psychology in addition to clinical, although Guthrie does not consider this. What departments should teach industrial psychology, educational psychology, interviewing, polling, vocational guidance, design of equipment for human use, and so forth? In my view, these and similar types of "applied" subjects are based on scientific psychological theories, facts, and methods, and could not be taught adequately by individuals who lack fundamental, high-level training in psychology. Then, too, these so-called applied fields now include many research people; research of a basic character is often produced in these fields. Far from fearing any deleterious effects from the training of psychologists in applied fields by departments of psychology, I am apprehensive of the effects of their not doing so. Of course, staffs and programs must be adequate, in quality and size, to

the task. To remove these fields, singly or otherwise, from psychology departments would seriously divide and limit the profession, as well as devitalize many psychologists and students. We should consider carefully the possible consequences of initiating any such movements.

Let us, then, not relegate clinical psychology to another department or another degree. Rather, we should seek constantly to improve, through coordinated nationwide experimentation and planning, the training and occupational situations of *all* psychologists. General suggestions for achieving these ends might include development of adequate procedures for selecting graduate students for any specialization in psychology (an example of such research on the selection of graduate students in clinical psychology is the work being done by Lowell Kelly and Donald Fiske), better integration of the "academic" and "practical" or clinical training programs, organizing and maintaining interdisciplinary components of training programs, studying the need for post doctoral training programs and developing the types of programs needed, improving procedures for selecting staff members for initial employment and for work in which they are most interested as well as for which they are best suited, improving the administrative organization of psychology departments, investigating the interrelationships between pure and applied psychology, studying psychological training and occupations in relation to the utilization of psychologists, and developing standards for psychological work in all fields. Thus far, many people have made proposals and suggestions concerning psychological training and "practice," but mostly as methods or programs to be put into action rather than as problems to be attacked experimentally. Since no group is better equipped than psychologists, by training, experience, and interests, to attack such problems, perhaps we might eventually develop administrative organizations, training programs, job standards, and so forth, based on research findings.

SIDNEY H. NEWMAN

United States Public Health Service,  
Washington, D. C.

#### Psychologists and Legality: A Case Report

To the Editor:

The recent murder trial of Robert Bednasek, a State University of Iowa student, has received much attention from psychologists owing to the fact that I, as a psychologist, was denied privileged communication by the court and was required to testify as to the content of a confidential interview I had had with him. Since a number of important professional issues are bound up with the case, it seems worthwhile to present it as a kind of case study in the legal status of psychologists

and the problems related to their professional standing in their communities.

The story in its essential outlines can be quickly told. In December, after a fraternity formal dance she had attended with Bednasek, a University co-ed was found dead from strangulation in his rooming house. The police were summoned by the boy himself, who had rushed to the station for help when the girl lost consciousness under circumstances about which he could not be very coherent. He was apprehended at once, held in the county jail, and brought to trial in March, 1950, on a county attorney's information charging him with first degree murder. The district court jury returned a verdict of acquittal after about three weeks of litigation.

When he was first arrested the boy told the police that during the preceding October he had consulted me at the University's Student Counseling Office about "homicidal impulses" which he had experienced. This information, of course, was given to counsel for the State, and I received a subpoena to appear in court as a State witness.

What had happened was this: In October, 1949, Bednasek came to the Student Counseling Office in a state of extreme agitation and anxiety because of recurrent "homicidal and suicidal impulses." These were especially alarming since the former were directed against a girl with whom he claimed to be very seriously in love. Although he did not name her then, she turned out to be, by his own statement, the girl who died in his living quarters in December.<sup>1</sup> Arrangements were made at once for him to see a psychiatric resident in the University Student Health Service on that same day. The resident, following an interview with the boy, expressed the opinion that he was not dangerous to himself or others, but did make an appointment for him to see the senior psychiatrist in Student Health. Bednasek failed to keep that appointment, and he had no further dealings with either the Student Counseling Office or the Student Health Service until December, when the girl died in his room. I saw him at his request the night after the event occurred and infrequently during his detention in jail while awaiting trial.

At trial, a sizeable point at issue was whether or not I could be required to testify regarding material I had received in professional confidence. Statute No. 622.10 in the Iowa Code holds that "attorneys, counselors, physicians, surgeons . . . priests or ministers of any gospel" and their clerks and secretaries may not testify against persons with respect to information originating within the context of a confidential professional relation-

ship except upon waiver by the person involved. When I was called into court on a Friday, an objection was entered against my testifying, and after an hour's examination of the matter by the judge in the court library, the ruling on the objection was postponed until the following Monday.

The intervening weekend involved a strenuous personal dilemma which I should not enjoy having to resolve again. The alternatives, in the event of the court's overruling the objection to my testifying, were plain: I could testify and thereby breach a confidentiality that had been implicitly promised to Bednasek and also run the risk of damaging the Student Counseling Office in the eyes of those University students who would be made to feel that it was no longer "safe" to talk about themselves there; or I could refuse to testify and be cited for contempt of court. The conflict was all the more acute since legal opinion was virtually unanimous that the ruling would be that a psychologist did not come within the immunities conferred by the privileged communication statute. The judge later did so rule.

Without making this report take the form of an apologia—were I forced to repeat the experience, I would stick with my decision—I should like to clarify my reasons for deciding to testify rather than to take a contempt citation. I do not deny that there was a good deal of personal reluctance to go to jail; there most certainly was. But there were other and, I think, more important considerations. In the first place, putting myself in contempt of court could easily have been interpreted as grasping for a martyr's status, and I doubt that many clinical psychologists, so often in their daily work confronted with most unsavory instances of martyrdom, could think that playing such a role would be of any value in altering the law. This shades into the second point as I saw it: If the statute did not include psychologists within its list of professional workers enjoying privileged communication, to me (and presumably to other psychologists) it needed changing; but in keeping with the democratic process, one attempts to change laws by statutory proceedings, not by the half-cocked exercise of what Thoreau called civil disobedience. Finally, there was genuine doubt as to whether or not the law as written did not serve the public welfare more fully than it would under a liberal interpretation. Since I was clearly neither attorney, nor physician, nor surgeon, nor minister of any gospel, I could be included under the immunities granted by the privileged communication statute only if I could be called a "counselor." If I could legitimately be called a counselor and therefore be given special legal privileges, *in the absence of any legal definition of psychologists in Iowa, why could not any Tom, Dick, or Harriet who chose hang out a shingle, call himself a counselor, and claim the same legal privileges and the*

<sup>1</sup> There is no reason to report any more of the conversation that took place between Bednasek and me. While the material is diagnostically useful, it is irrelevant now, and there is no further need to cause him embarrassment of any kind.

*same status in the eyes of the law?* A court precedent that would permit such an occurrence would be of no benefit either to psychology as a profession or to the general public.

When the court ruled on the matter, it argued that a psychologist could be included within the scope of the statute only under the term *counselor* and that the term *counselor* was synonymous with the term *attorney*. Therefore, psychologists could not be considered privileged. This interpretation rested on the fact that the two words, *counselor* and *attorney*, are used quite interchangeably in the Iowa Code and other relevant documents. Such a ruling may be regarded as conservative, I think, since there is no reason why a term must be restricted to mean only what it denotes when it is used as a synonym for another term and since there is some precedent for construing the law quite liberally. In a previous case (179 Iowa 342), for example, the Iowa Supreme Court had held that the elders of the Presbyterian Church were entitled to privileged communication immunities even though as laymen they could hardly qualify as "priests or ministers of any gospel." The majority opinion in this decision pointed out that the statute "must be interpreted liberally in the interests of broad public policy."

Nonetheless, it is precisely the matter of "broad public policy" that seemed to me to lend justice to the court's ruling. If psychologists have no legal status in the state, if there is no well defined answer to the question, "Who is a psychologist legally," I cannot help feeling that it is not only foolish but opposed to the public weal to hope for rights and privileges accorded only to professions licensed and subject to regulation by the state.

In the light of such considerations, I complied with the court's order, prefacing my testimony with the statement that I regretted giving it since it had been obtained in professional confidence and that I regarded giving it as highly questionable from the standpoint of professional ethics. The testimony itself was restricted to essentially what was reported above except that the resident psychiatrist's comments were not admissible because they constituted hearsay evidence. Because of his MD, the psychiatrist himself was never required to come into court.

I am not sure how widely understood this is in psychological circles, but in Maryland the privileged communication statute does not include MD's, in spite of the location of Johns Hopkins and the Phipps Psychiatric Clinic in Baltimore. One of the legal tests for granting immunities is that of necessity, and according to the dean of our Law School here (a member of the American Law Institute), the fact that physicians are just as busy in Maryland and that patients visit them just as often, even though they are not under

the "privileged communication statute," argues badly for the necessity for privileged communication. My own feelings, which the dean apparently in part shares, are that clinical psychologists and psychiatrists do not have nearly so much in common with general medical practitioners as they do with attorneys and ministers, whose entitlement to privilege is rarely questioned.

In any event, it would seem that some of the issues involved are highly important for any who are concerned with psychology as a profession.

EDWARD JOSEPH SHOBEN, JR.  
State University of Iowa

#### Retort Concerning German Psychologists

To the Editor:

Much as I appreciate the significance of the questions raised by Ross Stagner in the May *American Psychologist*, I fear that their presentation as a "reply" to my article in the February issue can only confound the points which I tried to make regarding the "Testing, Management and Reactions of Foreign Workers in Germany during World War II."

It was not within the scope of my paper to deal with the psychologists themselves—although, in order to round out the presentation, I did mention that a number of them got into difficulties with the Nazi authorities—not to include value judgments. Since we do not know with what reservations or at what cost to themselves the psychologists functioned within the Nazi state, such judgments would have been merely speculative. Since all scientists—and further, all individuals—have the obligation of inquiring into the ultimate ends served by their own efforts, no matter how constructive, this is not a problem peculiar to psychologists.

My purpose was to give an objective report of the kind of psychological work which had been carried out and to present the available data. One finding of the study was that the industrial psychological methods employed within the wartime Nazi state were of the same nature as those which are found valid elsewhere. Quite apart from any personal compromising of the psychologists in this situation, the principles they employed were not altered to fit the overall official ideology. Some were carried out in contradiction to Nazi doctrine, which was made possible by official inconsistency and by a certain latitude permitted to non-official individuals. To reiterate one of my conclusions: "This gives support to the now growing realization that even a totalitarian state is far more complex than its stereotype."

H. L. ANSBACHER  
University of Vermont

## Across the Secretary's Desk

### COMMENTS ON THE PASSING SCENE

Instead of serious discussions of the nature of psychology and the universe and the place of the American psychologist, it is occasionally tempting to write of lighter matters. Readers have suggested a lighter treatment of the Notes and News columns, and we sometimes amuse ourselves by writing these as pure gossip, with side comments. They never get printed, for I am subdued by the thought that five hundred universities are binding these columns for permanent use. A note which will look well ten years from now is usually formal, and all the Notes and News editors I have met prefer formality.

On the other hand, comments on the passing scene, such as Goodwin Watson's column *New Light* which used to appear in the *Journal of Consulting Psychology*, or Frederick Allen's book *Only Yesterday*, might perchance be endurable after ten years. Watson has refused; we would have to pay Allen; lacking a better author, here is my review of some of the topics of 1949-1950.

*PhD or Ph.D.?* After a certain abbreviation has been used many times, it looks right to me. Or after a word has been capped or not capped through some two years' issues, there is no stimulation for change. Change in these cases must arise from an external source.

For PhD written with periods, it does. Though E. G. Boring suggested that we drop the periods, and though I have now done so through two years of the *American Psychologist* and two years of the *Directory*, and though this represents at least 15,000 occasions, copy still comes in (except from Boring) with the periods in. The members of the Association are obviously still not accustomed to this style. Shall I give it up?

"*Someone really good.*" The Placement System received a request for personnel and, because it was a little unusual in type, we sent back among the list of possibilities to the head of the department some of his own students who had graduated in former years. His reply was: "We want someone really good, not one of our own students."

This reply makes me wonder how many departments would be willing to step out and let their

present crop of graduate students replace them. Eventually, the crop is the replacement, whether the department steps out or not.

*Complementaries among journals.* Watson Davis of Science Service has suggested that the journals of the APA appear in saturated colors so that the covers can be cut up for color-wheel experiments. This idea involved us in a discussion of which of the journals should be covered in complementary colors. *Applied* is already in bright yellow. If we changed *Comparative* to the proper blue, we could whirl the two journals together and get a neutral gray. The *Journal of Abnormal* is in a fairly saturated greenish blue, but which journal is the most normal to serve as its opposite?

*Milk.* Otto Klineberg tells this story on a young European-trained psychiatrist who served as his assistant in Brazil. The psychiatrist supported the view that men who drink milk are exhibiting an Oedipus reaction. Klineberg disagreed. Recently Klineberg visited his former assistant who is now teaching in this country. Surprised to find his host drinking a glass of milk at lunch, Klineberg twitted him about their earlier argument, and got the reply: "But American milk is so good."

*What is a psychologist?* Do you remember those composite portraits of movie actors and actresses that *Vanity Fair* printed about fifteen years ago? I wish someone with photography as a hobby would make a composite picture of a number of psychologists, so that we could publish a picture of the typical psychologist.

*Books and Cinema Department.* Early in 1949, I had the impression that *Cheaper by the Dozen* was the book which amused psychologists the most, and that *Cybernetics* was the book which influenced them the most. D. O. Hebb's textbook was received with more acclaim than any other. In 1950, I have no nominations. Perhaps the Korean situation has absorbed our reading time. My news sense tells me that von Neumann and Morgenstern's *Theory of Games and Economic Behavior* will eventually be in the library of many psychologists.

Lillian Gilbreth will be the only member of the American Psychological Association to appear in 1950 as the heroine of a full-length movie.

*Retirement.* Retirement brings its problems, and those who are about to retire tell themselves so firmly. The actual event still brings surprises. An administrator confided ruefully that "though of course all letters addressed to me at my old office are opened and most of them answered by the new incumbent, certain personal ones are sent on; and I have no stenographer now, and have never learned to type. It is a chore to answer them. Then, I confess that I got accustomed to the speed of the long-distance telephone. Now if I use long distance, I have to pay the bill myself."

*Annie.* Harry Harlow, who wrote this jingle, says you can use it once a year for the beginning class, as long as you aren't tempted to use it also for Abnormal:

#### Apathetic Annie

Apathetic Annie was complacent and serene  
Though suffering from paresis, consumption, and  
gangrene.  
But Annie did not seem to mind that life was  
passing on;  
For Annie had a tumor in the diencephalon.

*The secret married rate.* The APA has a special rate which all of us call "the married rate." It entitles a wife to choose some other journals than the regular "member" journals, so that the family is not required to receive duplicates. Last December came the news that two graduate students were secretly married, and were they therefore, they asked, entitled to a "secret married rate"?

We are now thinking of a divorce rate, in addition. This is the amount that a member must pay to obtain duplicate copies of the member journals when two psychologists get divorced, and each wants the family's file of *Psychological Abstracts*.

*Infatuation with the sound of my own words department.*  
The urge  
To merge  
Made Divisions 3 and 6 one;  
The journals of Experimental Psychology  
and Comparative and Physiological  
Remain separate and distinct—except in content.

*The annual meeting.* Willard C. Olson wrote instructions in 1937 for dealing with the Annual Meeting. He suggested that the number of simultaneous sessions be limited to three. In 1950, there are 60 symposia and 82 "paper-reading contests" listed, and the maximum number of simultaneous sessions is, I believe, 14. The 1950 Program Issue required approximately fifty cents of each member's dues for the year.

*Development of psychology.* The Wolfe family, reading manuscripts, has always had the hope that they would not reject that manuscript which contains the theory or the results which will influence the course of the science.

What form will this development take? Probably it will be mathematical, since great developments in science are likely to be expressed quantitatively. As the science of psychology progresses, original work in basic theory will come more and more to require training in mathematics.

I hope that, in spite of lack of comprehension, it will not be my lot to have rejected a paper which becomes known to future generations as "the paper which changed the course of the science of psychology."

*Newness of the APA.* The APA now has 174 members for every 100 it had in 1945. This rate of growth, indicating a vigor which is the envy of many other associations, confronts the Central Office of the APA with many members who know little about our customs. I confess to acting like a scolding mother at times, saying: "Professional people wear neckties when having application pictures taken, not Hawaiian sport shirts," or, more seriously, "If you wrote this abstract in the past tense, it indicated to the Program Committee that you had already performed the experiment. Now you say you have not. But the program is already published. I cannot change it now."

It seems to be one duty of the APA office to enforce the Association's rules. Every year, for example, the July issue contains the statement that some abstracts were not published because they were over 300 words; but every year some of the members, mostly new ones, submit abstracts that are far too long. Eventually, eventually, though, we hope to educate.

HELEN M. WOLFE

## *Psychological Notes and News*

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**Research fellow in psychometrics.** The Educational Testing Service is offering for 1951-52 its fourth series of research fellowships leading to the PhD degree at Princeton University. Open to men who are acceptable to the Graduate School of the University, the fellowships carry stipends of \$2,375 a year and are normally renewable. Competence in mathematics and psychology is a prerequisite. Information and application blanks may be obtained from: Director of Psychometric Fellowship Program, Educational Testing Service, Box 592, Princeton, New Jersey.

**Research assistantship in clinical psychology** in industry, for 1950-51. Stipend \$2000 for half-time work (20 hours per week) with the Human Relations Research Foundation, during academic year, or \$2500 for the calendar year. Open to graduate student, male or female, who wishes to specialize in clinical psychology in industry. Application must include application for admission to graduate work at Washington University. For further information write to Dr. H. Meltzer, Human Relations Research Foundation, 4510 Maryland Avenue, St. Louis, Missouri, or Department of Psychology, Washington University, St. Louis, Missouri.

**Advisor in Education**, an unassembled examination in the Federal Civil Service, described in Examining Circular EC-20, is a job series in which educational psychologists and vocational guidance counselors might qualify. Salaries, \$7,600 to \$10,000 a year (GS-13 to GS-15). Applications will be accepted until further notice. Current vacancies are listed as follows: "Departmental and field positions in Washington, D. C., Alexandria, Va., Arlington County, Va., and Prince Georges and Montgomery Counties, Md.; field positions in the Civil Aeronautics Administration and the Department of State throughout the country; positions of Visual Aide Specialist at grade GS-13 (\$7,600) in the Department of the Army throughout the country; and the position of Educational and Training Officer in the Veterans Administration Hospital in Topeka, Kansas, will be filled from this examination."

**Fulbright program for 1951-52.** The closing date for submitting applications is October 15, 1950. Psychologists are requested at certain designated institutions as follows:

**New Zealand** (*Impact of Culture upon Personality*). This field is being actively explored at both Victoria and Canterbury University Colleges and a visitor of high professional qualifications is wanted. The suggested teaching schedule is 2-3 hours of advanced teaching per week, and a course of 6 lectures open to all students of the Colleges.

**Norway.** The United States Educational Foundation for Norway has mentioned psychology and social psychology as especially appropriate for visiting scholars lecturing at the University of Oslo. There are opportunities for research as well.

**Turkey.** Preliminary information indicates a special interest at Ankara University in a visiting lecturer in general psychology, and at Istanbul University in sociology (statistical).

Most of the countries participating in the Fulbright program—especially France, Italy and the United Kingdom—provide a number of awards which are not restricted as to subject or receiving institutions.

Grants are made in the currency of the country, and usually include round-trip transportation for the grantee, a maintenance stipend, certain allowances for dependents, and allowances.

Requests for forms and information should be addressed to the Committee on International Exchange of Persons, Conference Board of Associated Research Councils, 2101 Constitution Avenue, Washington 25, D. C.

There are also many openings for pre-doctoral graduate study. Inquiries should be addressed to the Institute of International Education, 2 West 45th Street, New York 19, New York.

**Regular Corps Examinations for Scientists (Psychologist), USPHS.** Vacancies for Scientists (Psychologist) in the Regular Commissioned Corps of the United States Public Health Service will be filled as a result of an examination to be held in various cities throughout the country on December 11, 12, and 13, 1950. Completed ap-

plications must be in the Washington office of the USPHS by November 13, 1950. Applicants must have, or expect to receive by September, 1951, the doctor's degree in psychology. Members of the Commissioned Corps have military status, and substantially the same privileges granted members of the Army and Navy. Appointments will be made in the grades of Assistant Scientist and Senior Assistant Scientist, equivalent to Army ranks of First Lieutenant (\$4486) and Captain (\$5346) respectively. For application forms and additional information write to: Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers.

**Internships**, for September, 1950, appointment for one to three years. Personal analysis may be available, if necessary. Apply to Dr. Austin Foster, Department of Neuropsychiatry, University of Texas Medical Branch, Galveston, Texas.

**Call for papers for Section I, AAAS.** AAAS will meet in Cleveland, December 26 to December 31. Section I is planning papers and symposia for December 28 and 29. Abstracts of papers should be submitted to Delos D. Wickens, 404 University Hall, Ohio State University, Columbus 10, Ohio, by October 1, 1950.

The Student Counseling Bureau of the University of Minnesota is sponsoring a conference for administrators of university and college counseling programs. The meeting is for those who hold primary responsibilities for such programs and will cover problems pertaining to counseling personnel, relationships between counseling organizations and other divisions, developments in counseling techniques, and evaluation.

The conference will be held from November 13-16, 1950, at the Continuation Study Center on the Minnesota campus. Information can be obtained from Dr. Ralph Berdie, Director, Student Counseling Bureau, University of Minnesota, Minneapolis 14, Minnesota.

The Eighth Annual Reading Institute at Temple University has been announced for the week of January 29 to February 2, 1951. This year's program will deal with the topic "Systematic Instruction in Reading."

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